^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Ota and E. A. Mccutchan	NDS 203,1 (2025)	1-Apr-2025

1986De13,1985DeZU measured yield curve, resonance energies, and strengths (E(p)=430-1340 keV; Ge(Li), γ-x; ^{27}Al(p,γ) calibration); S(p) (^{66}Ga calibration source); γ's, $\gamma(\theta)$ (Ge(Li), γ-x). DSAM. Shell-model calculations.

1993Ca12 analyzed the data of 1986De13 using a nonmetric multi-dimensional scaling method.

Data from the works listed under "Others" have been retained only if they complement the present work or were cited by 1986De13 in their spin and parity arguments.

1974Ri16: E(p)=1-4 MeV. Activation measurement using NaI detectors. Deduced cross section and compared results to Hauser-Feshbach calculations.

1981Ke09: E(p)=0.72 − 3.0 MeV. Measured total γ yields at 55°. Deduced cross section and compared results to Hauser-Feshbach calculations.

1974Ri16: E(c.m.)≈1-4 MeV. Activation measurement; $\gamma^{\pm}$-coincidence, NaI.

1981Ke09: E=0.72-3.00 MeV. Measured total γ-ray yields (55°). Deduced σ and $<\sigma v>$.

Others: 1967Al18 (E(p)=1020-1365 keV), 1970Mc24 (E(p)=1363 keV), 1970Wi06 (E(p)=1095-1285 keV), and 1973Sc29 (E(p)=1546-1572 keV); see 1977Ha45 for a summary of these data. See 1986De13 for a comparison between their data and those compiled by 1977Ha45 and for a discussion of problems noted in the work of 1973Sc29. See also ^{46}Ti(p,γ) E=0.72-4 MeV and ^{46}Ti(p,γ),(p,p),(p,p′),(p,p′γ) for additional information on this reaction.

^{47}V Levels

Note: the 3491, 5233, and 5590 states suggested by 1973Sc29 were not observed by 1986De13.

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$[#]	Comments
0.	3/2$^-$[&]		
87.525 *9*	5/2$^-$[&]		
145.821 *15*	7/2$^-$[&]		
259.486 *4*	3/2$^+$[&]		
660.358 *9*	5/2$^+$		J$^{\pi}$: from 940 res primary $\gamma(\theta)$ and δ, RUL of 1780γ.
1138.55 *3*	7/2$^+$	>208 fs	J$^{\pi}$: from 940 res primary $\gamma(\theta)$ and decay $\gamma(\theta)'$s and RUL′s.
1271.80 *5*	9/2$^-$	0.25 ps *8*	J$^{\pi}$: from decay $\gamma(\theta)'$s and RUL′s.
1294.96 *6*	11/2$^-$[&]	>0.31 ps	
1660.62 *12*	1/2$^+$[&]	0.37 ps *16*	
1746.96 *4*	9/2$^+$	624 fs *+90−24*	J$^{\pi}$: from 1545,1825 res primary $\gamma(\theta)$ and 1825 res primary and decay δ's and RUL′s.
1968.92 *3*	3/2$^+$	0.44 ps *12*	J$^{\pi}$: from 1085 res primary $\gamma(\theta)$ and decay $\gamma(\theta)'$s and RUL′s.
2082.72 *2*	3/2$^-$	14.6 fs *35*	J$^{\pi}$: from 1253 res primary $\gamma(\theta)$ and 701 res primary and decay RUL′s.
2175.86 *4*	5/2$^-$	15 fs *5*	J$^{\pi}$: from 1545 res primary RUL and decay $\gamma(\theta)'$s and RUL′s.
2211.75 *3*	1/2$^-$	83 fs *21*	J$^{\pi}$: from 1096 res primary $\gamma(\theta)$ and decay RUL′s.
2439.54 *4*	5/2$^+$	65 fs *14*	J$^{\pi}$: from 940 res primary $\gamma(\theta)$ and RUL(2180).
2722.63 *7*	5/2$^-$	36 fs *10*	J$^{\pi}$: from decay $\gamma(\theta)'$s and RUL′s.
2747.12 *16*	9/2$^-$	25 fs *10*	J$^{\pi}$: from 1545 res primary $\gamma(\theta)$ and decay RUL′s.
2767.32 *6*	(1/2)$^-$	10.4 fs *28*	J$^{\pi}$: 1/2$^-$,3/2$^-$ from L(^{3}He,d)=1 (1967Ro13). 1/2 from average-spin method (1991Ki11).
2810.04 *12*	7/2$^+$	0.11 ps *3*	J$^{\pi}$: from 1085 res primary $\gamma(\theta)$ and decay RUL′s.
2984.29 *11*	7/2$^-$	5 fs *2*	J$^{\pi}$: from 1545 res primary $\gamma(\theta)$ and decay RUL′s.
3005.45 *3*	3/2$^-$	6 fs *2*	J$^{\pi}$: 3/2 from 1085,811 res primary RUL′s and decay $\gamma(\theta)'$s and RUL′s; L(p)=1 in (^{3}He,d).
3054.22 *15*	5/2$^-$	5 fs *2*	J$^{\pi}$: from 875 res primary RUL and 1545 res primary $\gamma(\theta)$.
3247.73 *8*	7/2$^-$	76 fs *21*	J$^{\pi}$: from 1545 res primary $\gamma(\theta)$ and 1336 res primary and decay RUL′s.

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^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

^{47}V Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
3303.53[a] *4*	3/2	32 fs *7*	Jπ: from 1336 res primary and decay γ(θ)'s.
3355.49[a] *13*	5/2+	5 fs *2*	Jπ: from 1253 res primary γ(θ) and RUL and decay RUL's.
3362.65 *9*	1/2(−)	2.8 fs *14*	Jπ: ≤5/2+ from 875,986 res primary RUL's (1986De13). ≠3/2 from 1549 res primary γ(θ); π=− from almost 100% decay to g.s. (1973Sc29).
3370.52[a] *4*	1/2,3/2,5/2+	11.8 fs *21*	Jπ: from 986 res primary RUL. 3370.52,3370.56 doublet identified by differing γ-deexcitation patterns.
3370.56 *8*	3/2	<5 fs	Jπ: ≤3/2 from 986,875 res primary RUL's; ≠1/2 from 1154 res primary γ(θ).
3517.08 *15*	5/2(−)	<6.9 fs	Jπ: 5/2 from decay γ(θ) and decay RUL's (1986De13). π=− since δ≠0 for 1565 res primary (1973Sc29).
3524.60 *12*	7/2+	9.7 fs *28*	Jπ: from 1253 res primary γ(θ) and decay RUL's.
3590.35 *6*	5/2(−)	6 fs *2*	Jπ: 5/2 from decay γ(θ) and RUL's (1986De13). π=− since δ≠0 for 1565 res primary (1973Sc29).
3659.71 *14*	(7/2)	14 fs *4*	Jπ: from 1253 res primary γ(θ) and RUL and from decay RUL's. Parentheses added by evaluator since this state is a possible doublet. Possible doublet.
3694.4[a] *3*	5/2(+),(3/2+)	6 fs *3*	Jπ: from 1336 res primary RUL and decay γ(θ) and RUL's.
3718.0[a] *3*	7/2,(5/2,9/2+)		Jπ: from 1545,1085 res primary RUL's and decay γ(θ).
3721.29 *13*	7/2	15 fs *6*	Jπ: from 1253 res primary γ(θ) and 1545 res primary RUL.
3762.7[a] *3*	1/2,3/2,5/2		Jπ: from 743 res primary RUL.
3773.4 *2*	(1/2)	<11 fs	Jπ: 1/2,(3/2−,5/2−) from 743,875,1154 res primary RUL's (1986De13). 1/2 from average-spin method (1991Ki11).
3822.6 *2*	1/2,3/2	19 fs *9*	Jπ: from 875,1559 res primary RUL's.
3869.0[a] *3*	5/2[b]	9.7 fs *35*	
3875.75[a] *30*	5/2,(3/2−)	<8 fs	Jπ: from 1286 res primary and decay RUL's.
3876.0 *2*	7/2−[b]	<11 fs	
3890.1[a] *2*	≤5/2+	<3.5 fs	Jπ: from 1559 res primary RUL.
3892.26 *11*	3/2,(5/2+)	24 fs *18*	Jπ: from 986,1085 res primary and decay RUL's.
3952.6[a] *4*	7/2,(5/2−)	37 fs *14*	Jπ: from decay γ(θ) and 940 res primary and decay RUL's.
3958.7[a] *3*	3/2+	9.0 fs *28*	Jπ: from 1253 res primary γ(θ) and decay RUL's.
3984.97[a] *17*	7/2,(3/2+,5/2+)	24 fs *9*	Jπ: from 1253 res primary RUL.
4080.60 *12*	3/2+	15 fs *4*	Jπ: from decay γ(θ)'s and 986 res primary and decay RUL's.
4099.06[a] *14*	5/2−,(3/2−)[b]	<8.3 fs	
4100.31 *10*	3/2−	5.5 fs *21*	Jπ: 3/2 from 986,875,1253 res primary and decay RUL's. L(^{3}He,d)=1.
4118.12[a] *14*	3/2,(1/2,5/2)	13 fs *4*	Jπ: from 811 res primary RUL.
4150.35 *11*	5/2(−)	<7 fs	Jπ: from 1085 res primary and decay RUL's.
4197.3 *3*	5/2(−)	<11 fs	Jπ: from 1085,1154 res primary and decay RUL's.
4207.10[a] *14*	3/2,(1/2,5/2)		Jπ: from 1559 res primary RUL.
4222.48 *6*	5/2	<11 fs	Jπ: from decay γ(θ)'s.
4271.60 *20*	7/2,(3/2+,5/2+)		Jπ: from 1336 res primary RUL.
4271.75 *12*	(1/2)	<11 fs	Jπ: 1/2,(3/2−) from 986,875,1154 primary RUL's (1986De13). 1/2 from average-spin method (1991Ki11).
4345.19 *10*	(1/2+)	<9 fs	Jπ: 3/2,1/2+ from 986,875,1253 primary RUL's (1986De13). 1/2 from average-spin method (1991Ki11).
4392.80[a] *20*	3/2,(1/2−)	<24 fs	Jπ: from 1559,875 res primary and decay RUL's.
4402.6[a] *3*	7/2,(5/2,9/2)[b]	<28 fs	
4406.4[a] *4*			
4453.7[a] *2*	7/2	11 fs *6*	Jπ: from 1253 res primary γ(θ) and decay RUL's.
4509.52[a] *14*	7/2,(3/2,5/2+)		Jπ: from 1253 res primary γ(θ).
4510.01 *14*	5/2,(3/2−)	<8.3 fs	Jπ: from 1154 res primary RUL and decay γ(θ).
4514.5[a] *3*	3/2,(1/2,5/2−)		Jπ: from 875 res primary RUL.
4543.02[a] *20*	3/2,(1/2,5/2+)		Jπ: from 1559 res primary RUL.
4568.68 *20*	5/2	<9 fs	Jπ: from 1545,1096 res primary RUL's and γ(θ).

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^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

^{47}V Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	(2J+1)$\Gamma_p\Gamma_\gamma/\Gamma$ (meV)[@]	Comments
4694.33[a] *11*	5/2$^+$,(3/2$^+$)	<8.3 fs		Jπ: from decay $\gamma(\theta)$'s and 1085 res primary and decay RUL's.
4719.2[a] *3*	3/2,(1/2,5/2$^-$)			Jπ: from 875 res primary RUL.
4733.8[a] *3*	9/2$^{(-)}$	<15 fs		Jπ: from 1545 res primary RUL and decay RUL's and $\gamma(\theta)$'s.
4792.9[a] *3*	1/2,3/2			Jπ: from 875,986 res primary RUL's.
4796.8[a] *3*	3/2,(1/2$^-$,5/2$^-$)			Jπ: from 875,1154 res primary RUL's.
4807.30 *14*	5/2	15 fs *9*		Jπ: from 1253 res primary and decay RUL's.
4852.5[a] *3*	5/2,(1/2$^-$,3/2$^-$)			Jπ: from 1154 res primary RUL.
4907.6[a] *2*	5/2,(3/2$^+$,7/2$^+$)	<13 fs		Jπ: from 1253 res primary RUL.
4955.12[a] *13*	1/2,3/2,5/2$^+$			Jπ: from 986 res primary RUL.
4976.5[a] *3*				
4998.7[a] *3*	5/2,(7/2)			Jπ: from 1545,1096 res primary RUL's and decay $\gamma(\theta)$.
5016.0[a] *3*	3/2,(5/2$^+$)	<15 fs		Jπ: from 975,1085 res primary RUL's and decay $\gamma(\theta)$.
5108.65[a] *13*	1/2,3/2,5/2$^+$			Jπ: from 986 res primary RUL's.
5123.86 *14*	7/2,(5/2$^+$)			Jπ: from 1253 res primary and decay RUL's.
5142.16 *9*	3/2,(1/2$^-$,5/2$^-$)	<11 fs		Jπ: from 875,1154 res primary RUL's.
5222.71[a] *20*	3/2,(5/2$^+$)			Jπ: from 1559 res primary RUL and decay $\gamma(\theta)$.
5233.3? *3*				From 1973Sc29. J^π=(3/2$^-$) suggested by 1973Sc29 not adopted by evaluator due to possible problems with the data. See 1986De13 for discussion.
5240.0[a] *3*	5/2$^{(+)}$,(3/2$^+$,7/2$^+$)	<5 fs		Jπ: from 1253 res primary RUL.
5635.8 *3*	3/2$^-$	<19 fs	0.8 *2*	T=3/2 possible IAS(^{47}Ti,1550) and possibly fragmented. E(level): E(p)=478.5 *3* calculated by 1986De13 from measured Ex=5635.8 *3*. $T_{1/2}$: based on the Doppler-shift of primary γ's deexciting the resonance.
5738 *3*	1/2,3/2	<7 fs	1.5 *3*	$T_{1/2}$: based on the Doppler-shift of primary γ's deexciting the resonance. E_p(lab)=583 *3*.
5853.58[c] *9*	1/2$^{(-)}$	<8 fs	27 *4*	$T_{1/2}$: based on the Doppler-shift of primary γ's deexciting the resonance. E(level): from E_p(lab)=700.72 *9* and Sp (2021Wa16).
5885.4[c] *2*	3/2	<7 fs	8 *2*	$T_{1/2}$: based on the Doppler-shift of primary γ's deexciting the resonance. E(level): from E_p(lab)=733.2 *2* and Sp (2021Wa16).
5887.17 *5*	1/2$^{(-)}$	<2 fs	124[d] *17*	Fragment of IAS(^{47}Ti,1794)? E(level): E(p)=735.38 *9* calculated by 1986De13 from measured Ex=5887.17 *5*.
5894.77[c] *12*	1/2	<5 fs	47 *7*	E(level): from E_p(lab)=742.80 *11* and Sp (2021Wa16).
5961.4 *4*	1/2	<8.3 fs	28 *4*	E(level): from E_p(lab)=810.9 *4* and Sp (2021Wa16).
5994.5 *4*	3/2	<6 fs	13 *3*	$T_{1/2}$: based on the Doppler-shift of primary γ's deexciting the resonance. E(level): from E_p(lab)=844.7 *4* and Sp (2021Wa16).
6024.17 *8*	1/2$^-$	<1.4 fs	240 *30*	E(level): from E_p(lab)=875.02 *6* and Sp (2021Wa16). possible fragment of IAS(^{47}Ti,1794).
6087.60 *8*	5/2$^{(+)}$	<5 fs	30 *4*	$T_{1/2}$: based on the Doppler-shift of primary γ's

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^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

^{47}V Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$[#]	(2J+1)$\Gamma_p\Gamma_\gamma/\Gamma$ (meV)[@]	Comments
				deexciting the resonance. E(level): from E_p(lab)=939.83 *6* and S(p) (2021Wa16).
6122.24 *8*	1/2$^{(+)}$	<3 fs	89 *11*	E(level): from E_p(lab)=975.22 *6* and S(p) (2021Wa16).
6132.77 *7*	1/2$^+$	<1.4 fs	180 *20*	E(level): calibration point of all E(p) values, except as noted. E(level): from E_p(lab)=985.98 *5* and S(p) (2021Wa16).
6157.69 *8*	(5/2$^+$)	<17 fs	38 *5*	E(level): from E_p(lab)=1011.44 *6* and S(p) (2021Wa16).
6166.36 *8*	3/2$^{(-)}$	<1.4 fs	460 *60*	E(level): from E_p(lab)=1020.30 *6* and S(p) (2021Wa16).
6190.76 *8*	(3/2)	<2 fs	240 *30*	E(level): from E_p(lab)=1045.23 *6* and S(p) (2021Wa16).
6229.72 *8*	5/2$^+$	<3 fs	200 *30*	E(level): from E_p(lab)=1085.04 *6* and Sn (2021Wa16).
6240.11 *8*	3/2$^{(-)}$	<0.7 fs	7.1×10^{2}[d] *10*	E(level): from E_p(lab)=1095.66 *6* and Sn (2021Wa16).
6271.09 *9*	(3/2$^-$)	<0.4 fs	1.22×10^{3}[d] *15*	E(level): from E_p(lab)=1127.31 *7* and S(p) (2021Wa16).
6296.77 *9*	3/2$^-$	<1.4 fs	510 *60*	E(level): from E_p(lab)=1153.54 *7* and S(p) (2021Wa16).
6351.15 *9*	(3/2)		9.8×10^{2} *13*	E(level): from E_p(lab)=1209.11 *7* and S(p) (2021Wa16).
6373.99 *9*	(1/2)	<2 fs	116 *14*	E(level): from E_p(lab)=1232.44 *7* and S(p) (2021Wa16).
6387.44 *9*	(5/2$^+$)	<3 fs	170 *20*	E(level): from E_p(lab)=1246.19 *9* and S(p) (2021Wa16). possible fragment of IAS(^{47}Ti,2260).
6394.12 *9*	5/2$^+$	<1.4 fs	440 *60*	E(level): from E_p(lab)=1253.01 *7* and S(p) (2021Wa16). possible fragment of IAS(^{47}Ti,2260).
6426.04 *13*	3/2$^{(-)}$	<1.4 fs	470 *60*	E(level): from E_p(lab)=1285.62 *11* and S(p) (2021Wa16).
6427.56 *13*	5/2	<1.4 fs	480 *60*	E(level): from E_p(lab)=1287.18 *11* and S(p) (2021Wa16).
6475.47 *9*	5/2$^{(+)}$	<1.4 fs	510 *60*	E(level): from E_p(lab)=1336.13 *7* and S(p) (2021Wa16).
6679.38 *18*	7/2$^{(-)}$	<1.4 fs	620 *90*	E(level): E(p)=1545.0 *2* calculated from measured Ex=6679.38 *18*.
6682.84 *5*	3/2$^{(-)}$		1.50×10^{3} *20*	E(level): E(p)=1548.51 *9* calculated from measured Ex=6682.84 *5*. Fragment of IAS(^{47}Ti,2549) (1973Sc29).
6692.86 *18*	1/2$^+$	<0.9 fs	290 *50*	E(level): E(p)=1558.8 *2* calculated from measured Ex=6692.86 *18*.
6699	(3/2$^-$)			E(level): from E(p)=1565 (1973Sc29) and S(p) (2021Wa16). J$^{\pi}$: arguments of 1973Sc29 considered weak by evaluators due to possible problems in data; see 1986De13 for for discussion. fragment of IAS(^{47}Ti,2549) (1973Sc29).
6953.4 *3*	9/2$^+$	<7 fs		E(level): E(p)=1825.9 *3* calculated by 1986De13 from measured Ex=6953.4 *3*. T$_{1/2}$: based on the Doppler-shift of primary γ's deexciting the resonance.

[†] Bound-state excitation energies and proton resonance energies are from 1986De13. ^{182}Ta, ^{192}Ir, ^{66}Ga, and ^{144}Ce sources used to obtain energy calibration. S(p)=5167.60 keV *7* (2003Au03). Additional resonances were observed at E(p) [(2J+1)$\Gamma_p\Gamma_\gamma/\Gamma$, meV; E_x]=655 *5* [0.5 *5*], 952.11 *9* [15 *5*], 1007.6 *2*, 1062.42 *8* [34 *11*], 1183.3 *2* [11 *4*], 1210.04 *9* [100 *50*], 1222.94 *7* [70 *20*], 1225.09 *11* [20 *7*], 1268.30 *7* [360 *120*], 1823.3 *5* [—; 6951.7 *5*], and 1825.9 *3* [—; 6954.3 *3*]. However, no conclusions could be reached as to their probable spins and parities.

[‡] The arguments of 1986De13 are summarized below for bound-state J^{π}'s and in the table above for resonance J^{π}'s; trailing J^{π}'s enclosed in parentheses are considered less likely based on "weak arguments.".

[#] Averaged values of DSAM data for the bound states; a 20% systematic uncertainty due to the stopping power has been added quadratically with the statistical uncertainty. Lifetimes of resonances from the resonance strength, except as noted.

[@] Absolute strengths were deduced from relative strengths by normalizing to the absolute strengths of the E(p)=735, 1096, and 1127 resonances as obtained in a special experiment.

[&] From the Adopted Levels, assumed by the 1986De13 in their analysis.

[a] Previously unreported state. 1986De13 used the following procedure to adopt a new state: 1. Energies of feeding and decay gammas are consistent. 2. The state is found in at least two resonances (except for the 4.73-MeV, 9/2$^{(-)}$, state which due to the high spin is observed in only one resonance).

[b] From decay RUL's.

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^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

^{47}V Levels (continued)

[c] E(p) calibrated on 735-keV resonance.
[d] Absolute measurement serving as a secondary standard.

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

$\gamma(^{47}V)$

Transitions from resonances have been omitted if Iγ<1% and δ has not been determined.
Branching ratios for the 1209-keV resonance are also given by 1986De13 but have not been compiled since no conclusions were reached on the spin and parity of this resonance.
Coincidences for bound-state transitions from 1967Al18 ($\gamma\gamma$ and $\Sigma\gamma\gamma$; NaI, Ge(Li)) or 1970Wi06 ($\gamma\gamma(\theta)$; NaI, Ge(Li)). See 1967Al18 and 1970Wi06 for primary-secondary coincidences.

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
87.525	5/2$^-$	87.5	100	0.	3/2$^-$	M1+E2	+0.10 *6*	I_γ,Mult.,δ: from 1970Wi06.
259.486	3/2$^+$	172.0	8 *1*	87.525	5/2$^-$			
		259.5	92 *1*	0.	3/2$^-$			
660.358	5/2$^+$	400.9	29.9 *2*	259.486	3/2$^+$			
		514.5	18.1 *2*	145.821	7/2$^-$			
		572.8	14.1 *3*	87.525	5/2$^-$			
		660.4	38.0 *3*	0.	3/2$^-$			
1138.55	7/2$^+$	478.2	25.0 *5*	660.358	5/2$^+$			
		879.1	32.5 *4*	259.486	3/2$^+$	E2(+M3)	−0.03 *5*	
		992.7	4.4 *2*	145.821	7/2$^-$			
		1051	38.0 *4*	87.525	5/2$^-$	D+Q	+0.05 *4*	
		1139[e]	<0.2	0.	3/2$^-$			
1271.80	9/2$^-$	1126	81.8 *1*	145.821	7/2$^-$			Iγ<0.1% to other states (≤0.66 MeV).
		1184	18.2 *1*	87.525	5/2$^-$			
1294.96	11/2$^-$	1149	100	145.821	7/2$^-$			Iγ<2% to other states (≤0.66 MeV).
1660.62	1/2$^+$	1000	1.3 *1*	660.358	5/2$^+$			Iγ<0.1% to other states (≤1.29 MeV).
		1401	73.4 *4*	259.486	3/2$^+$			
		1661	25.3 *3*	0.	3/2$^-$			
1746.96	9/2$^+$	608.4	17 *1*	1138.55	7/2$^+$	M1+E2		Iγ<0.5% to other states (≤1.29 MeV). δ: −0.19 *4* or −2.0 *1*.
		1087	46 *1*	660.358	5/2$^+$	E2(+M3)	−0.00 *3*	
		1601	36 *2*	145.821	7/2$^-$	D(+Q)	+0.00 *1*	
1968.92	3/2$^+$	308.3	1.4 *4*	1660.62	1/2$^+$			Iγ<0.2% to other states (≤1.66 MeV).
		830.4	0.9 *2*	1138.55	7/2$^+$			
		1309	32 *1*	660.358	5/2$^+$	M1+E2		δ: −0.50 *3* or −1.2 *1*.
		1709	9 *1*	259.486	3/2$^+$	M1+E2		δ: −0.36 *4* or −11 *4*.
		1881	54.9 *3*	87.525	5/2$^-$	D(+Q)	−0.01 *1*	
		1969	2.9 *2*	0.	3/2$^-$	D(+Q)	−0.02 *4*	
2082.72	3/2$^-$	1422	0.3 *1*	660.358	5/2$^+$			Iγ<0.2% to other states (≤1.75 MeV).
		1937	1.7 *1*	145.821	7/2$^-$			
		1995	69.8 *2*	87.525	5/2$^-$	M1+E2		δ: +0.08 *2* or −7.1 *6*.
		2083	28.1 *3*	0.	3/2$^-$	D+Q		δ: −0.05 *4* or +4.6 *9*.
2175.86	5/2$^-$	1916	0.3 *1*	259.486	3/2$^+$			Iγ<0.1% to other states (≤1.97 MeV).
		2030	1.6 *1*	145.821	7/2$^-$			

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

γ(^{47}V) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
2175.86	5/2⁻	2088	21.5 *4*	87.525	5/2⁻	M1+E2	+0.56 *11*	
		2176	76.5 *4*	0.	3/2⁻	M1+E2		δ: +0.14 *1* or −6.7 *4*.
2211.75	1/2⁻	551.1	0.6 *1*	1660.62	1/2⁺			Iγ<0.3% to other states (≤1.97 MeV).
		1952	14.5 *2*	259.486	3/2⁺			
		2124	4.3 *1*	87.525	5/2⁻			
		2212	80.7 *2*	0.	3/2⁻			
2439.54	5/2⁺	263.7[e]	<0.7	2175.86	5/2⁻			Iγ<0.2% to other states (≤2.18 MeV).
		470.6	11 *1*	1968.92	3/2⁺	M1+E2	+0.08 *3*	
		778.9	0.9 *3*	1660.62	1/2⁺			
		1779	27 *1*	660.358	5/2⁺	M1+E2		δ: −0.42 *3* or +6 *1*.
		2180	36 *2*	259.486	3/2⁺	M1+E2		δ: −0.40 *4* or −1.4 *1*.
		2294	15.4 *4*	145.821	7/2⁻	D+Q	+0.06 *3*	
		2352	2 *1*	87.525	5/2⁻			
		2439	8 *1*	0.	3/2⁻	D+Q	+0.05 *4*	
2722.63	5/2⁻	1451	0.8 *1*	1271.80	9/2⁻			Iγ<0.3% to other states (≤2.18 MeV).
		1584	5.2 *2*	1138.55	7/2⁺			
		2463	1.2 *2*	259.486	3/2⁺			
		2577	20 *1*	145.821	7/2⁻			
		2635	18.4 *5*	87.525	5/2⁻	M1+E2	−3.8 *10*	
		2723	55 *1*	0.	3/2⁻	M1+E2	+1.9 *1*	
2747.12	9/2⁻	1452	1.8 *5*	1294.96	11/2⁻			Iγ<0.7% to other states (≤2.18 MeV).
		1475	5.3 *4*	1271.80	9/2⁻			
		2601	86 *1*	145.821	7/2⁻	M1+E2	−0.46 *2*	
		2660	7 *1*	87.525	5/2⁻	E2(+M3)	−0.01 *8*	
2767.32	(1/2)⁻	2767	100	0.	3/2⁻			Iγ<3% to other states (≤2.18 MeV).
2810.04	7/2⁺	370	0.8 *3*	2439.54	5/2⁺			Iγ<0.2% to other states (≤2.18 MeV).
		841	3.2 *3*	1968.92	3/2⁺	E2(+M3)	−0.02 *4*	
		1063	12.1 *4*	1746.96	9/2⁺	M1+E2	−0.29 *3*	
		1538	10.8 *3*	1271.80	9/2⁻	D(+Q)	+0.02 *2*	
		1671	2.7 *4*	1138.55	7/2⁺			
		2149	23.4 *3*	660.358	5/2⁺	M1+E2	−0.29 *3*	
		2550	2.8 *4*	259.486	3/2⁺			
		2664	0.8 *4*	145.821	7/2⁻			
		2722	43 *1*	87.525	5/2⁻	D(+Q)	+0.01 *1*	
2984.29	7/2⁻	1712	29.0 *5*	1271.80	9/2⁻	M1+E2	+0.15 *1*	Iγ<0.3% to other states (≤2.18 MeV).
		2838	58 *1*	145.821	7/2⁻	M1+E2	+0.15 *3*	
		2896	12 *1*	87.525	5/2⁻	M1+E2		δ: −0.36 *3* or −1.5 *1*.
		2984	1.3 *5*	0.	3/2⁻			
3005.45	3/2⁻	2918	64.5 *3*	87.525	5/2⁻	D+Q		Iγ<0.3% to other states (≤2.18 MeV). δ: −0.03 *6* or −4.1 *10*.
		3005	35.5 *3*	0.	3/2⁻	D+Q		δ: −0.01 *8* or +4.1 *13*.
3054.22	5/2⁻	1307[e]	<14	1746.96	9/2⁺			

$^{47}_{23}V_{24}$-7

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
3054.22	5/2$^-$	2908	57 *1*	145.821	7/2$^-$			
		2966	43 *1*	87.525	5/2$^-$			
3247.73	7/2$^-$	1072	23 *1*	2175.86	5/2$^-$	M1+E2	+0.39 *3*	Iγ<2% to other states (≤2.18 MeV).
		1953	12 *2*	1294.96	11/2$^-$	E2(+M3)	+0.07 *8*	
		1976	10 *1*	1271.80	9/2$^-$			
		2109[e]	<5	1138.55	7/2$^+$			
		3102	18 *2*	145.821	7/2$^-$			
		3160	19 *2*	87.525	5/2$^-$			
		3248	18 *2*	0.	3/2$^-$	E2+M3	+0.15 *9*	
3303.53	3/2	1221	4.5 *5*	2082.72	3/2$^-$	D+Q		Iγ<1.2% to other states (≤2.18 MeV). δ: +0.03 *4* or +3.4 *5*.
		1335	7 *1*	1968.92	3/2$^+$			
		2643	9 *3*	660.358	5/2$^+$			
		3044	7.5 *4*	259.486	3/2$^+$	D+Q		δ: −0.11 *4* or +7 *2*.
		3216	71 *2*	87.525	5/2$^-$	D+Q		δ: −0.05 *2* or −3.7 *3*.
3355.49	5/2$^+$	2695	18 *1*	660.358	5/2$^+$	D(+Q)	+0.09 *10*	Iγ<2% to other states (≤2.18 MeV).
		3096	78 *1*	259.486	3/2$^+$	D+Q		δ: +0.08 *2* or −5.3 *5*.
		3355	4.1 *4*	0.	3/2$^-$	D(+Q)	+0.06 *8*	
3362.65	1/2$^{(-)}$	1280	2.0 *3*	2082.72	3/2$^-$			Iγ<0.8% to other states (≤2.18 MeV).
		3363	98.1 *3*	0.	3/2$^-$			
3370.52	1/2,3/2,5/2$^+$	1288	2.9 *5*	2082.72	3/2$^-$			Iγ<0.9% to other states (≤2.18 MeV).
		1401	5 *1*	1968.92	3/2$^+$			
		3111	28 *1*	259.486	3/2$^+$			
		3283[e]	<8	87.525	5/2$^-$			
		3370	64 *1*	0.	3/2$^-$			
3370.56	3/2	3283	65 *2*	87.525	5/2$^-$	D+Q		Iγ<0.5% to other states (≤2.18 MeV). δ: +0.2 *1* or <−2.0.
		3370	35 *2*	0.	3/2$^-$	D+Q		δ: 0.0 *1* or <−0.3.
3517.08	5/2$^{(-)}$	3371	33 *3*	145.821	7/2$^-$	D+Q		Iγ<5% to other states (≤2.18 MeV). δ: +0.09 *6* or <−25.
		3429	50 *3*	87.525	5/2$^-$			
		3517	9 *2*	0.	3/2$^-$			
3524.60	7/2$^+$	2386	31.8 *4*	1138.55	7/2$^+$	D(+Q)	−0.02 *2*	Iγ<0.2% to other states (≤2.18 MeV).
		2864	66.7 *4*	660.358	5/2$^+$	D(+Q)	−0.01 *2*	
		3265	1.6 *3*	259.486	3/2$^+$	E2+M3	+0.10 *6*	
3590.35	5/2$^{(-)}$	3444	18 *2*	145.821	7/2$^-$			Iγ<1.3% to other states (≤2.18 MeV).
		3503	3 *2*	87.525	5/2$^-$			
		3590	73 *4*	0.	3/2$^-$	D+Q		δ: +0.06 *4* or −3.3 *7*.
3659.71	(7/2)	2388	35 *3*	1271.80	9/2$^-$			Iγ<1.1% to other states (≤2.18 MeV).
		2999	22 *2*	660.358	5/2$^+$			
		3400[e]	<5	259.486	3/2$^+$			

γ(^{47}V) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
3659.71	(7/2)	3572	23 *1*	87.525	5/2⁻			
3694.4	5/2(+),(3/2+)	3034	16 *1*	660.358	5/2+			Iγ<2% to other states (≤2.18 MeV).
		3435	72 *2*	259.486	3/2+	D+Q		δ: +0.11 *7* or −8 *2* if J_i=5/2.
		3607	13 *2*	87.525	5/2⁻			
3718.0	7/2,(5/2,9/2+)	3572	100	145.821	7/2⁻	D+Q		δ: −0.4 *2* or +2.2 *8*.
		3630[e]	<20	87.525	5/2⁻			
		3718[e]	<14	0.	3/2⁻			
3721.29	7/2	2583	19 *1*	1138.55	7/2+			Iγ<1.1% to other states (≤2.18 MeV).
		3061	74 *1*	660.358	5/2+	D(+Q)	+0.02 *2*	δ: see 1986De13 for other value considered very unlikely.
		3462	1.5 *4*	259.486	3/2+			
		3634	5.1 *5*	87.525	5/2⁻			
3762.7	1/2,3/2,5/2	3102	17 *4*	660.358	5/2+			Iγ<3% to other states (≤2.18 MeV).
		3675	29 *4*	87.525	5/2⁻			
		3763	13 *7*	0.	3/2⁻			
3773.4	(1/2)	3686[e]	<20	87.525	5/2⁻			Iγ<6% to other states (≤2.18 MeV).
		3773	100	0.	3/2⁻			
3822.6	1/2,3/2	1740	3 *1*	2082.72	3/2⁻			Iγ<1.4% to other states (≤2.18 MeV).
		2162	6 *1*	1660.62	1/2+			
		3563	18 *2*	259.486	3/2+			
		3822	70 *3*	0.	3/2⁻			
3869.0	5/2	3209[e]	<12	660.358	5/2+			Iγ<5% to other states (≤2.18 MeV).
		3609	11 *1*	259.486	3/2+			
		3723	86 *1*	145.821	7/2⁻	D(+Q)	−0.01 *5*	
		3781	3 *1*	87.525	5/2⁻			
3875.75	5/2,(3/2⁻)	1793	27 *2*	2082.72	3/2⁻			Iγ<3% to other states (≤2.18 MeV).
		3729	38 *3*	145.821	7/2⁻	D+Q[@]		δ: −0.1 *2* or <−2 if J_i=5/2.
		3875	35 *3*	0.	3/2⁻	D+Q		δ: −0.27 *12* or <−0.6 if J_i=5/2.
3876.0	7/2⁻	1793[e]	<11	2082.72	3/2⁻			Iγ<4% to other states (≤2.18 MeV).
		2581	73 *3*	1294.96	11/2⁻			
		3788	27 *3*	87.525	5/2⁻	M1+E2		δ: +0.23 *6* or <−25.
3890.1	≤5/2+	2229	12 *3*	1660.62	1/2+			Iγ<5% to other states (≤2.18 MeV).
		3230[e]	<6	660.358	5/2+			
		3630	57 *6*	259.486	3/2+			
		3744[e]	<6	145.821	7/2⁻			
		3802[e]	<6	87.525	5/2⁻			
		3890[e]	<7	0.	3/2⁻			
3892.26	3/2,(5/2+)	1716	9 *1*	2175.86	5/2⁻			Iγ<2% to other states (≤2.18 MeV).
		1810	2 *1*	2082.72	3/2⁻			
		3633	66 *2*	259.486	3/2+			
3952.6	7/2,(5/2⁻)	2292[e]	<16	1660.62	1/2+			Iγ<4% to other states (≤2.18 MeV).

$^{47}_{23}V_{24}$-9

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
3952.6	7/2,(5/2$^-$)	2681	13 *3*	1271.80	9/2$^-$	D+Q		Mult.: if J_i=7/2. δ: −0.34 *35* or −2.3 *11* if J_i=7/2.
		2814	24 *5*	1138.55	7/2$^+$	D+Q		δ: −0.02 *25* or −0.9 *4*.
		3292	37 *6*	660.358	5/2$^+$	D+Q		δ: +0.01 *10* or −4.1 *15*.
		3693[e]	<5	259.486	3/2$^+$			
		3865[e]	<5	87.525	5/2$^-$			
		3952[e]	<6	0.	3/2$^-$			
3958.7	3/2$^+$	1876	4.3 *4*	2082.72	3/2$^-$			Iγ<1.3% to other states (≤2.18 MeV).
		1990	2 *1*	1968.92	3/2$^+$			
		3298	24 *2*	660.358	5/2$^+$			
		3699	29 *2*	259.486	3/2$^+$	M1+E2	−1.3 *5*	
		3959	40 *1*	0.	3/2$^-$	D(+Q)	−0.10 *15*	δ: +6 *3* excluded by $\Delta\pi$ and comparison to RUL.
3984.97	7/2,(3/2$^+$,5/2$^+$)	2846	4 *1*	1138.55	7/2$^+$			Iγ<4% to other states (≤2.18 MeV). Decays from this state are contaminated.
		3324	48 *2*	660.358	5/2$^+$			
		3725[e]	<44	259.486	3/2$^+$			
		3897	5 *1*	87.525	5/2$^-$			
4080.60	3/2$^+$	3420	9 *2*	660.358	5/2$^+$			Iγ<2% to other states (≤2.18 MeV).
		3821	59 *3*	259.486	3/2$^+$	M1+E2		δ: −0.15 *3* or +9 *3*.
		3993	25 *2*	87.525	5/2$^-$			
4099.06	5/2$^-$,(3/2$^-$)	3839	11 *1*	259.486	3/2$^+$	D(+Q)[@]	0.00[@] *11*	Iγ<2% to other states (≤1.29 MeV).
		3953	30 *1*	145.821	7/2$^-$	D+Q[@]		δ: −0.04 *8* or <−0.7 if J_i=5/2.
		4011	4 *1*	87.525	5/2$^-$			
		4099	35 *1*	0.	3/2$^-$			
4100.31	3/2$^-$	3841	9 *1*	259.486	3/2$^+$	D+Q		Iγ<2% to other states (≤2.18 MeV). δ: +0.30 *9* or <−0.3.
		4013	14 *1*	87.525	5/2$^-$	D+Q		δ: −0.04 *13* or −4 *+1−4*.
		4100	56 *2*	0.	3/2$^-$			
4118.12	3/2,(1/2,5/2)	4118	50 *4*	0.	3/2$^-$			Iγ<3% to other states (≤1.75 MeV).
4150.35	5/2$^{(-)}$	4004	13 *1*	145.821	7/2$^-$			Iγ<0.7% to other states (≤1.97 MeV).
		4063	37 *1*	87.525	5/2$^-$			
		4150	50 *1*	0.	3/2$^-$			
4197.3	5/2$^{(-)}$	4051[e]	<24	145.821	7/2$^-$			Iγ<2% to other states (≤2.18 MeV).
		4197	43 *4*	0.	3/2$^-$			
4207.10	3/2,(1/2,5/2)	2238	30 *8*	1968.92	3/2$^+$			
		2546[e]	<5	1660.62	1/2$^+$			
		3068[e]	<7	1138.55	7/2$^+$			
		3547[e]	<7	660.358	5/2$^+$			
		3947	29 *8*	259.486	3/2$^+$			
		4061[e]	<10	145.821	7/2$^-$			

$^{47}_{23}V_{24}$-10

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	Comments
4207.10	3/2,(1/2,5/2)	4119[e]	<5	87.525	5/2$^-$		
		4207[e]	<10	0.	3/2$^-$		
4222.48	5/2	4135	32 *2*	87.525	5/2$^-$		Iγ<3% to other states (≤2.08 MeV).
		4222	60 *2*	0.	3/2$^-$	D+Q	δ: −0.16 *5* or −2.1 *3*.
4271.60	7/2,(3/2$^+$,5/2$^+$)	2189[e]	<3	2082.72	3/2$^-$		
		2611[e]	<11	1660.62	1/2$^+$		
		3611	16 *3*	660.358	5/2$^+$		
		4012	24 *3*	259.486	3/2$^+$		
		4126[e]	<3	145.821	7/2$^-$		
		4184[e]	<4	87.525	5/2$^-$		
		4272[e]	<3	0.	3/2$^-$		
4271.75	(1/2)	2611	13 *2*	1660.62	1/2$^+$		Iγ<2% to other states (≤2.18 MeV).
		4012[e]	<13	259.486	3/2$^+$		
		4272	24 *4*	0.	3/2$^-$		
4345.19	(1/2$^+$)	2169[e]	<4	2175.86	5/2$^-$		Iγ<3% to other states (≤1.97 MeV).
		2262	10 *3*	2082.72	3/2$^-$		
		3685	29 *2*	660.358	5/2$^+$		
		4086	20 *3*	259.486	3/2$^+$		
		4345	14 *2*	0.	3/2$^-$		
4392.80	3/2,(1/2$^-$)	4247[e]	<4	145.821	7/2$^-$		Iγ<1.2% to other states (≤2.18 MeV).
		4305	24 *4*	87.525	5/2$^-$		
		4393	15 *2*	0.	3/2$^-$		
4402.6	7/2,(5/2,9/2)	3108[e]	<10	1294.96	11/2$^-$		
		3130	42 *15*	1271.80	9/2$^-$	D+Q	δ: −0.10 *15* or <−2 if J_i=7/2.
		3264[e]	<23	1138.55	7/2$^+$		
		3742[e]	<14	660.358	5/2$^+$		
		4143[e]	<13	259.486	3/2$^+$		
		4257[e]	<13	145.821	7/2$^-$		
		4315[e]	<13	87.525	5/2$^-$		
		4402[e]	<14	0.	3/2$^-$		
4406.4		3746[e]	<6	660.358	5/2$^+$		
		4147	30 *5*	259.486	3/2$^+$		
		4260[e]	<5	145.821	7/2$^-$		
		4319[e]	<5	87.525	5/2$^-$		
		4406[e]	<11	0.	3/2$^-$		
4453.7	7/2	2793[e]	<3	1660.62	1/2$^+$		Iγ<2% to other states (≤2.08 MeV).
		3159[e]	<15	1294.96	11/2$^-$		
		3315	16 *2*	1138.55	7/2$^+$	D+Q	δ: −0.29 *7* or <−0.6 given by 1986De13 for 3793γ assumed to belong to this transition since 3793γ was not observed (evaluator).
		3793[e]	<9	660.358	5/2$^+$		

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	Comments
4453.7	7/2	4308	24 *4*	145.821	$7/2^-$		
		4366[e]	<5	87.525	$5/2^-$		
		4453[e]	<5	0.	$3/2^-$		
4509.52	7/2,(3/2,5/2$^+$)	3849	63 *8*	660.358	$5/2^+$	D+Q	Iγ<5% to g.s. and 145.8 state. δ: +0.02 *7* or −4 *1* if J_i=7/2.
4510.01	5/2,(3/2$^-$)	4422	50 *9*	87.525	$5/2^-$		Iγ<3% to other states (≤0.66 MeV).
		4510	31 *2*	0.	$3/2^-$		
4514.5	3/2,(1/2,5/2$^-$)	3854[e]	<16	660.358	$5/2^+$		
		4255[e]	<16	259.486	$3/2^+$		
		4368[e]	<17	145.821	$7/2^-$		
		4427[e]	<17	87.525	$5/2^-$		
		4514[e]	<17	0.	$3/2^-$		
4543.02	3/2,(1/2,5/2$^+$)	4283	89 *3*	259.486	$3/2^+$		Iγ<7% to other states (≤0.66 MeV).
		4543	11 *3*	0.	$3/2^-$		
4568.68	5/2	4568	73 *4*	0.	$3/2^-$		Iγ<5% to other states (≤0.66 MeV).
4694.33	5/2$^+$,(3/2$^+$)	4435	51 *4*	259.486	$3/2^+$	M1+E2[@]	Iγ<3% to g.s. and 87.5 state. δ: −0.29 *7* or −1.6 *2* if J_i=5/2.
4719.2	3/2,(1/2,5/2$^-$)	2543	35 *3*	2175.86	$5/2^-$		Iγ<4% to other states (≤1.75 MeV).
		2636	20 *9*	2082.72	$3/2^-$		
		2750[e]	<7	1968.92	$3/2^+$		
		3058[e]	<11	1660.62	$1/2^+$		
		4631	14 *4*	87.525	$5/2^-$		
4733.8	9/2$^{(-)}$	3444	46 *7*	1294.96	$11/2^-$	D+Q	δ: −0.04 *9* or <−5.
		3464	23 *9*	1271.80	$9/2^-$		
		3594[e]	<8	1138.55	$7/2^+$		
		4588[e]	<7	145.821	$7/2^-$		
		4646[e]	<7	87.525	$5/2^-$		
		4734[e]	<7	0.	$3/2^-$		
4792.9	1/2,3/2	2710	17 *3*	2082.72	$3/2^-$		Iγ<6% to other states (≤2.18 MeV).
		4647[e]	<6	145.821	$7/2^-$		
		4705[e]	<7	87.525	$5/2^-$		
		4793	68 *7*	0.	$3/2^-$		
4796.8	3/2,(1/2$^-$,5/2$^-$)	2585	3 *1*	2211.75	$1/2^-$		Iγ<4% to other states (≤2.18 MeV).
		2714	21 *2*	2082.72	$3/2^-$		
		4709	9 *2*	87.525	$5/2^-$		
		4797	49 *3*	0.	$3/2^-$		
4807.30	5/2	4147	24 *6*	660.358	$5/2^+$		
		4548[e]	<5	259.486	$3/2^+$		
		4661	26 *4*	145.821	$7/2^-$	D+Q	δ: +0.06 *20* or <−3.5.
		4720[e]	<6	87.525	$5/2^-$		

$^{47}_{23}V_{24}$-12

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
4807.30	5/2	4807[e]	<4	0.	3/2$^-$			
4852.5	5/2,(1/2$^-$,3/2$^-$)	4192[e]	<6	660.358	5/2$^+$			
		4593	31 *4*	259.486	3/2$^+$			
		4706[e]	<6	145.821	7/2$^-$			
		4765	18 *4*	87.525	5/2$^-$			
		4852[e]	<6	0.	3/2$^-$			
4907.6	5/2,(3/2$^+$,7/2$^+$)	3769[e]	<12	1138.55	7/2$^+$			Iγ<3% to other states (≤0.15 MeV).
		4247	69 *5*	660.358	5/2$^+$	D(+Q)[@]	+0.6[@] *10*	
		4648[e]	<6	259.486	3/2$^+$			
4955.12	1/2,3/2,5/2$^+$	4295[e]	<10	660.358	5/2$^+$			
		4695	78 *11*	259.486	3/2$^+$			
		4809[e]	<14	145.821	7/2$^-$			
		4867[e]	<15	87.525	5/2$^-$			
		4955[e]	<17	0.	3/2$^-$			
4976.5		4976	22 *2*	0.	3/2$^-$			Iγ<4% to other states (≤0.66 MeV).
4998.7	5/2,(7/2)	4338[e]	<13	660.358	5/2$^+$			
		4739[e]	<13	259.486	3/2$^+$			
		4852	20 *9*	145.821	7/2$^-$			
		4911	49 *12*	87.525	5/2$^-$			
		4998[e]	<13	0.	3/2$^-$			
5016.0	3/2,(5/2$^+$)	4355[e]	<14	660.358	5/2$^+$			
		4756[e]	<6	259.486	3/2$^+$			
		4870[e]	<6	145.821	7/2$^-$			
		4928[e]	<7	87.525	5/2$^-$			
		5016	43 *6*	0.	3/2$^-$	D+Q[&]		δ: −0.02 *15* or <−3 if J_i=3/2.
5108.65	1/2,3/2,5/2$^+$	4448[e]	<13	660.358	5/2$^+$			
		4849[e]	<13	259.486	3/2$^+$			
		4962[e]	<15	145.821	7/2$^-$			
		5021[e]	<13	87.525	5/2$^-$			
		5108	54 *25*	0.	3/2$^-$			
5123.86	7/2,(5/2$^+$)	3376	17 *3*	1746.96	9/2$^+$			Iγ<5% to other states (≤1.97 MeV and 2.18 MeV).
		3985	24 *3*	1138.55	7/2$^+$			
		4463	38 *12*	660.358	5/2$^+$			
5142.16	3/2,(1/2$^-$,5/2$^-$)	4481[e]	<8	660.358	5/2$^+$			
		4882[e]	<9	259.486	3/2$^+$			
		4996[e]	<11	145.821	7/2$^-$			
		5054[e]	<12	87.525	5/2$^-$			
		5142	100	0.	3/2$^-$			
5222.71	3/2,(5/2$^+$)	4562[e]	<21	660.358	5/2$^+$			

$^{47}_{23}V_{24}$-13

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

γ(^{47}V) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	Comments
5222.71	3/2,(5/2$^+$)	4963[e]	<21	259.486	3/2$^+$		
		5076[e]	<23	145.821	7/2$^-$		
		5135[e]	<13	87.525	5/2$^-$		
		5222	64 *24*	0.	3/2$^-$	D+Q[&]	δ: −0.3 *2* or <−3 if J_i=3/2.
5240.0	5/2$^{(+)}$,(3/2$^+$,7/2$^+$)	4579	76 *3*	660.358	5/2$^+$	D+Q[@]	Iγ<3% to other states (≤1.14 MeV). δ: −0.03 *8* or +1.8 *4* if J_i=5/2.
5635.8	3/2$^-$	3424	8	2211.75	1/2$^-$	D+Q	A_2=−0.66 *20* δ: −0.07 *17* or −1.5 *5*.
		3553	37	2082.72	3/2$^-$	D+Q	A_2=0.53 *10* δ: +0.08 *8* or +2.9 *7*.
		3975	6	1660.62	1/2$^+$		
		5548	30	87.525	5/2$^-$	D+Q	A_2=0.05 *14* δ: −0.14 *15* or −2.8 *10*.
		5635	19	0.	3/2$^-$		
5738	1/2,3/2	3562	4	2175.86	5/2$^-$		
		4077	9	1660.62	1/2$^+$	D+Q	A_2=−0.21 *14* δ: +0.15 *8* or −2.5 *6*.
		5077	11	660.358	5/2$^+$		
		5478	72	259.486	3/2$^+$	D+Q	A_2=−0.16 *9* δ: −0.38 *8* or <−5.
		5650	4	87.525	5/2$^-$		
5853.58	1/2$^{(-)}$	2080	1.9	3773.4	(1/2)		ΣIγ=3.3% to other bound states.
		2091	1.0	3762.7	1/2,3/2,5/2		
		2482.69	8.1	3370.56	3/2		
		3641	23	2211.75	1/2$^-$		
		3770	58	2082.72	3/2$^-$		
		5593	2.8	259.486	3/2$^+$		
		5853	1.3	0.	3/2$^-$		
5885.4	3/2	2295	3	3590.35	5/2$^{(-)}$	D+Q	A_2=−0.13 *17* δ: +0.02 *15* or <−3.
		3445	8	2439.54	5/2$^+$	D+Q	A_2=−0.04 *11* δ: −0.05 *10* or −3.7 *+12−25*.
		3673	13	2211.75	1/2$^-$	D+Q	A_2=−0.36 *9* δ: +0.08 *5* or −2.1 *3*.
		3802	6	2082.72	3/2$^-$	D+Q	A_2=0.28 *13* δ: −0.07 *9* or +5.3 *+48−18*.
		4224	12	1660.62	1/2$^+$	D+Q	A_2=−0.44 *8* δ: +0.02 *5* or −1.8 *2*.
		5797	37	87.525	5/2$^-$	D+Q	A_2=0.04 *9* δ: −0.13 *9* or −2.8 *7*.
		5885	21	0.	3/2$^-$	D+Q	A_2=0.41 *19* δ: −0.02 *13* or +3.6 *+33−13*.

$^{47}_{23}V_{24}$-14

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
5887.17	1/2$^{(-)}$	3675	2.1	2211.75	1/2$^-$			ΣIγ=3.4% to other bound states.
		3804	14	2082.72	3/2$^-$			
		4226	3.5	1660.62	1/2$^+$			
		5887	77	0.	3/2$^-$			
5894.77	1/2	2590	1.1	3303.53	3/2			ΣIγ=4.2% to other bound states.
		3682	6.2	2211.75	1/2$^-$			
		3811	7.4	2082.72	3/2$^-$			
		4233	37	1660.62	1/2$^+$			
		5634	24	259.486	3/2$^+$			
		5894	20	0.	3/2$^-$			
5961.4	1/2	1690.25	1.2	4271.60	7/2,(3/2$^+$,5/2$^+$)			ΣIγ=4.0% to other bound states.
		1844	1.4	4118.12	3/2,(1/2,5/2)			
		2070	2.9	3892.26	3/2,(5/2$^+$)			
		3750	20	2211.75	1/2$^-$			
		3993	15	1968.92	3/2$^+$			
		4301	20	1660.62	1/2$^+$			
		5702	7.0	259.486	3/2$^+$			
		5962	28	0.	3/2$^-$			
5994.5	3/2	2171	1.6	3822.6	1/2,3/2			
		2221	1.0	3773.4	(1/2)			
		2623.54	1.0	3370.56	3/2			
		2989	2.3	3005.45	3/2$^-$			
		3227	4.9	2767.32	(1/2)$^-$	D+Q		A_2=−0.40 *10* δ: +0.05 *6* or −2.0 *3*.
		3271	4.9	2722.63	5/2$^-$			
		3554	2.0	2439.54	5/2$^+$	D+Q		A_2=0.03 *20* δ: −0.1 *3* or −2.9 *+15−45*.
		3782	4.3	2211.75	1/2$^-$	D+Q		A_2=−0.92 *15* δ: −0.4 *2* or −0.8 *+6−3*.
		3818	17	2175.86	5/2$^-$			
		3911	2.4	2082.72	3/2$^-$			
		4333	4.2	1660.62	1/2$^+$	D(+Q)	+0.07 *8*	A_2=−0.38 *14*
		5333	28	660.358	5/2$^+$	D(+Q)	+0.03 *3*	A_2=−0.13 *3*
		5734	21	259.486	3/2$^+$	D+Q	−0.05 *3*	A_2=0.32 *4*
		5994	6	0.	3/2$^-$	D+Q		A_2=−0.33 *9* δ: −0.54 *10* or −4 *1*.
6024.17	1/2$^-$	1227	1.3	4796.8	3/2,(1/2$^-$,5/2$^-$)			ΣIγ=5.7% to other bound states.
		2201	1.2	3822.6	1/2,3/2			
		2661	3.1	3362.65	1/2$^{(-)}$			
		3811	5.7	2211.75	1/2$^-$			
		3941	16	2082.72	3/2$^-$			
		4054	1.5	1968.92	3/2$^+$			

$^{47}_{23}V_{24}$-15

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
6024.17	$1/2^-$	5935	2.2	87.525	$5/2^-$			
		6023	63	0.	$3/2^-$			
6087.60	$5/2^{(+)}$	1865	1.3	4222.48	5/2			$\Sigma I\gamma$=0.7% to other bound states.
		2135	4.6	3952.6	7/2,($5/2^-$)	D+Q	−0.04 *3*	A_2=−0.08 *4*
		2428	1.1	3659.71	(7/2)			
		3082	1	3005.45	$3/2^-$			
		3648	33	2439.54	$5/2^+$	D(+Q)	−0.02 *2*	A_2=0.43 *2*
		3911	1.0	2175.86	$5/2^-$			
		4118	1.0	1968.92	$3/2^+$			
		4340	2.0	1746.96	$9/2^+$			A_2=0.11 *13*
		4948	8	1138.55	$7/2^+$	(D+Q)		A_2=−0.87 *3* δ: +0.62 *6* or +2.1 *2*.
		5427	35	660.358	$5/2^+$	(D+Q)	+0.23 *4*	A_2=0.64 *3*
		5827	4	259.486	$3/2^+$	(D+Q)	+2.0 *5*	A_2=0.88 *8*
		5941	0.8	145.821	$7/2^-$	D(+Q)	+0.11 *16*	A_2=−0.32 *20*
		5999	1.0	87.525	$5/2^-$	D(+Q)	−0.2 *2*	A_2=0.25 *19*
		6087	5	0.	$3/2^-$	D+Q	−0.07 *6*	A_2=−0.53 *10*
6122.24	$1/2^{(+)}$	2163	8.2	3958.7	$3/2^+$			$\Sigma I\gamma$=5.2% to other bound states.
		3354	1.4	2767.32	$(1/2)^-$			
		3910	4.4	2211.75	$1/2^-$			
		4039	8.1	2082.72	$3/2^-$			
		4153	7.6	1968.92	$3/2^+$			
		4461	45	1660.62	$1/2^+$			
		5862	18	259.486	$3/2^+$			
		6121	1.8	0.	$3/2^-$			
6132.77	$1/2^+$	2761.83	1.5	3370.56	3/2			$\Sigma I\gamma$=5.4% to other bound states.
		2761.87	5.3	3370.52	1/2,3/2,$5/2^+$			
		2770	1.8	3362.65	$1/2^{(-)}$			
		2829	5.7	3303.53	3/2			
		3693	4.2	2439.54	$5/2^+$			
		3920	3.7	2211.75	$1/2^-$			
		4163	12	1968.92	$3/2^+$			
		5472	11	660.358	$5/2^+$			
		5873	14	259.486	$3/2^+$			
		6132	35	0.	$3/2^-$			
6157.69	($5/2^+$)	2199	1.5	3958.7	$3/2^+$			$\Sigma I\gamma$=3.0% to other bound states.
		2463	4.8	3694.4	$5/2^{(+)}$,($3/2^+$)			
		2802	1.0	3355.49	$5/2^+$			
		3718	3.3	2439.54	$5/2^+$			
		4188	4.1	1968.92	$3/2^+$			
		5018	29	1138.55	$7/2^+$			

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
6157.69	(5/2$^+$)	5497	17	660.358	5/2$^+$			
		5897	25	259.486	3/2$^+$			
		6011	1.9	145.821	7/2$^-$			
		6069	3.5	87.525	5/2$^-$			
		6157	6.3	0.	3/2$^-$			
6166.36	3/2$^{(-)}$	1656	1.0	4510.01	5/2,(3/2$^-$)			$\Sigma I\gamma$=8.3% to other bound states.
		1894.4	1.4	4271.75	(1/2)			
		1969	1.2	4197.3	5/2$^{(-)}$			
		2016	7.6	4150.35	5/2$^{(-)}$			
		2066	1.8	4100.31	3/2$^-$			
		2795	4.5	3370.56	3/2			
		2803	2.2	3362.65	1/2$^{(-)}$			
		3160	8.7	3005.45	3/2$^-$			
		3399	1.5	2767.32	(1/2)$^-$			
		3443	10	2722.63	5/2$^-$			
		3954	34	2211.75	1/2$^-$			
		3990	4.1	2175.86	5/2$^-$			
		4083	3.1	2082.72	3/2$^-$			
		5906	2.2	259.486	3/2$^+$			
		6078	7.7	87.525	5/2$^-$			
6190.76	(3/2)	1622	1.3	4568.68	5/2			$\Sigma I\gamma$=5.2% to other bound states.
		1968	1.3	4222.48	5/2			
		3185	1.9	3005.45	3/2$^-$			
		3423	1.8	2767.32	(1/2)$^-$			
		3468	1.9	2722.63	5/2$^-$			
		4014	1.3	2175.86	5/2$^-$			
		5530	11	660.358	5/2$^+$			
		5930	47	259.486	3/2$^+$			
		6102	3.2	87.525	5/2$^-$			
		6190	23	0.	3/2$^-$			
6229.72	5/2$^+$	1213	0.7	5016.0	3/2,(5/2$^+$)	D(+Q)	+0.03 *3*	A_2=−0.33 *7* $\Sigma I\gamma$=2.8% to other bound states.
		1535	1.4	4694.33	5/2$^+$,(3/2$^+$)	D(+Q)	+0.08 *8*	A_2=0.53 *6*
		2032	0.3	4197.3	5/2$^{(-)}$	D(+Q)	+0.1 *3*	A_2=0.53 *20*
		2079	0.3	4150.35	5/2$^{(-)}$	D(+Q)	+0.1 *3*	A_2=0.21 *20*
		2360	4.1	3869.0	5/2	D(+Q)	−0.03 *3*	A_2=0.41 *3*
		2508	1.7	3721.29	7/2	D+Q		A_2=0.05 *5* δ: −0.14 *4* or −3.9 *6*.
		2511	0.6	3718.0	7/2,(5/2,9/2$^+$)	D+Q		A_2=0.04 *13* δ: −0.13 *11* or −4 *1*.
		2570	1.0	3659.71	(7/2)	D+Q		A_2=−0.63 *8* δ: +0.37 *8* or +4 *1*.

$^{47}_{23}V_{24}$-17

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
6229.72	5/2$^+$	2705	1.5	3524.60	7/2$^+$			
		2926	1.2	3303.53	3/2	D(+Q)	+0.01 *2*	A_2=−0.38 *3*
		3224	2.8	3005.45	3/2$^-$			
		3419	22	2810.04	7/2$^+$	D+Q	+0.05 *1*	A_2=−0.22 *1*
		3790	14	2439.54	5/2$^+$	D+Q	+0.04 *2*	A_2=0.48 *2*
		4053	4.6	2175.86	5/2$^-$	D(+Q)	+0.04 *4*	A_2=0.48 *3*
		4147	2.0	2082.72	3/2$^-$	D(+Q)	−0.01 *2*	A_2=−0.41 *4*
		4260	23	1968.92	3/2$^+$	D+Q	−0.15 *1*	A_2=−0.66 *1*
		4482	1.9	1746.96	9/2$^+$	Q(+O)	−0.02 *4*	A_2=0.22 *5*
		4569	0.5	1660.62	1/2$^+$	Q+O	−0.09 *7*	A_2=0.40 *15*
		5569	2.9	660.358	5/2$^+$	D+Q		A_2=−0.07 *5* δ: −0.45 *5* or +4 *1*.
		5970	2.8	259.486	3/2$^+$	D+Q	−2.75 *10*	A_2=−0.51 *3*
		6083	3.4	145.821	7/2$^-$	D+Q	+0.10 *4*	A_2=−0.30 *4*
		6142	2.8	87.525	5/2$^-$	D+Q	−0.15 *5*	A_2=0.27 *6*
		6229	1.6	0.	3/2$^-$	D+Q	−0.07 *2*	A_2=−0.53 *4*
6240.11	3/2$^{(-)}$	1241	0.3	4998.7	5/2,(7/2)	D+Q		A_2=0.11 *10* $\Sigma I\gamma$=2.7% to other bound states. δ: −0.21 *12* or −2.3 *6* if J_f=5/2.
		1521	0.4	4719.2	3/2,(1/2,5/2$^-$)	D+Q		A_2=0.30 *8* δ: −0.05 *6* or +5 *1* if J_f=3/2.
		1671	0.8	4568.68	5/2	D+Q		A_2=−0.14 *5* δ: +0.03 *5* or −6 *2*.
		1725	0.3	4514.5	3/2,(1/2,5/2$^-$)	D+Q		A_2=0.44 *11* δ: +0.03 *7* or +3.5 *10* if J_f=3/2.
		1847	0.4	4392.80	3/2,(1/2$^-$)	D+Q		A_2=0.43 *10* δ: +0.04 *7* or +3.3 *7* if J_f=3/2.
		1895	1.1	4345.19	(1/2$^+$)	D(+Q)	+0.01 *4*	A_2=0.41 *5*
		2017	1.1	4222.48	5/2			
		2139	3.6	4100.31	3/2$^-$	D+Q	−0.14 *5*	A_2=0.05 *5*
		2141	1.0	4099.06	5/2$^-$,(3/2$^-$)	D+Q		A_2=0.29 *2* δ: −0.07 *2* or +5.4 *5*.
		2649	2.4	3590.35	5/2$^{(-)}$	D+Q		A_2=−0.05 *3* δ: −0.04 *3* or −3.8 *4*.
		2877	1.2	3362.65	1/2$^{(-)}$	D+Q		A_2=−0.58 *4* δ: −0.05 *2* or −1.6 *8*.
		3185	2.8	3054.22	5/2$^-$	D+Q		A_2=−0.05 *3* δ: −0.04 *3* or −1.9 *4*.
		3234	0.5	3005.45	3/2$^-$	D+Q		A_2=0.08 *8* δ: −0.21 *5* or +20 *10*.
		3472	3.2	2767.32	(1/2)$^-$	D+Q		A_2=−0.40 *2* δ: +0.06 *1* or −2.0 *1*.

$^{47}_{23}V_{24}$-18

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

γ(^{47}V) (continued)

E_i(level)	J_i^π	E_γ †	I_γ ‡	E_f	J_f^π	Mult.#	δ#	Comments
6240.11	$3/2^{(-)}$	3800	1.3	2439.54	$5/2^+$	D+Q		A_2=0.08 *6* δ: −0.16 *6* or −2.6 *4*.
		4028	4.9	2211.75	$1/2^-$	D+Q	−0.14 *2*	A_2=−0.71 *2*
		4064	29	2175.86	$5/2^-$	D+Q		A_2=−0.11 *1* δ: +0.01 *1* or −4.8 *3*.
		4157	0.5	2082.72	$3/2^-$	D+Q		A_2=0.79 *9* δ: +0.30 *10* or −1.7 *3*.
		4579	0.7	1660.62	$1/2^+$	D+Q	−0.05 *3*	A_2=−0.58 *5*
		5579	1.2	660.358	$5/2^+$	D(+Q)	−0.04 *6*	A_2=−0.05 *6*
		5980	1.2	259.486	$3/2^+$	D(+Q)	+0.00 *6*	A_2=0.41 *9*
		6152	35	87.525	$5/2^-$	D+Q		A_2=−0.08 *2* δ: −0.02 *2* or −4.3 *3*.
		6239	4.9	0.	$3/2^-$	D+Q		A_2=−0.18 *3* δ: −0.39 *3* or −8 *2*.
6271.09	$(3/2^-)$	1874	2.1	4392.80	$3/2,(1/2^-)$			Σ Iγ=4.9% to other bound states.
		2048	1.8	4222.48	5/2			
		2170	6.0	4100.31	$3/2^-$			
		2378	1.4	3892.26	$3/2,(5/2^+)$			
		2680	1.5	3590.35	$5/2^{(-)}$			
		2754	1.2	3517.08	$5/2^{(-)}$			
		2900.13	4.1	3370.56	3/2			
		2908	1.9	3362.65	$1/2^{(-)}$			
		3221	1.9	3054.22	$5/2^-$			
		3503	1.0	2767.32	$(1/2)^-$			
		3548	9.3	2722.63	$5/2^-$			
		6011	4.3	259.486	$3/2^+$			
		6183	46	87.525	$5/2^-$			
		6270	12	0.	$3/2^-$			
6296.77	$3/2^-$	1154	0.3	5142.16	$3/2,(1/2^-,5/2^-)$	D(+Q)	+0.02 *15*	A_2=0.41 *17* Σ Iγ=4% to other bound states.
		1444	0.5	4852.5	$5/2,(1/2^-,3/2^-)$	D+Q		A_2=−0.07 *7* δ: −0.02 *7* or −4.3 *13* if J_f=5/2.
		1500	0.6	4796.8	$3/2,(1/2^-,5/2^-)$	D+Q		A_2=−0.37 *8* δ: −0.01 *7* or −4.2 *12* if J_f=3/2.
		1786	1.8	4510.01	$5/2,(3/2^-)$	D+Q		A_2=−0.08 *5* δ: −0.01 *5* or −4.3 *9* if J_f=5/2.
		2024.6	0.9	4271.75	(1/2)	D+Q		A_2=−0.39 *4* δ: +0.04 *3* or −1.9 *1* if J_f=1/2.
		2099	1.1	4197.3	$5/2^{(-)}$	D+Q		A_2=0.00 *4* δ: −0.09 *5* or −3.2 *5*.
		2178	2.8	4118.12	3/2,(1/2,5/2)			

$^{47}_{23}V_{24}$-19

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
6296.77	3/2$^-$	2197	4.2	4100.31	3/2$^-$	D+Q		A_2=−0.01 *2* δ: −0.08 *2* or −3.4 *3* if J_f=5/2.
		2523	0.8	3773.4	(1/2)	D+Q[a]		A_2=−0.44 *6* δ: +0.02 *4* or −1.8 *2* if J_f=1/2.
		2706	1.9	3590.35	5/2$^{(-)}$			
		2925.79	9.4	3370.56	3/2	D+Q		A_2=0.24 *2* δ: −0.09 *2* or +6.2 *6*.
		2934	2.4	3362.65	1/2$^{(-)}$			
		3857	1.8	2439.54	5/2$^+$	D(+Q)	−0.01 *4*	A_2=−0.08 *4*
		4120	1.2	2175.86	5/2$^-$			
		4213	5.1	2082.72	3/2$^-$	M1+E2		A_2=0.80 *3* δ: +0.33 *4* or +1.5 *1*.
		4327	1.2	1968.92	3/2$^+$	D+Q	−0.08 *4*	A_2=0.26 *6*
		4635	5.4	1660.62	1/2$^+$	D(+Q)	−0.00 *1*	A_2=−0.49 *2*
		6208	2.5	87.525	5/2$^-$	D+Q		A_2=−0.77 *4* δ: +0.85 *20* or +1.2 *+12−6*.
		6296	52	0.	3/2$^-$	M1+E2		A_2=0.78 *2* δ: +0.31 *2* or +1.6 *1*.
6351.15	(3/2)	1209	0.1	5142.16	3/2,(1/2$^-$,5/2$^-$)			
		1335	0.2	5016.0	3/2,(5/2$^+$)			
		1352	0.1	4998.7	5/2,(7/2)			
		1782	1.0	4568.68	5/2			
		1836	0.1	4514.5	3/2,(1/2,5/2$^-$)			
		1841	0.4	4510.01	5/2,(3/2$^-$)			
		2079	0.6	4271.75	(1/2)			
		2128	0.9	4222.48	5/2			
		2153	0.2	4197.3	5/2$^{(-)}$			
		2200	0.1	4150.35	5/2$^{(-)}$			
		2233	0.5	4118.12	3/2,(1/2,5/2)			
		2250	1.7	4100.31	3/2$^-$			
		2270	1.0	4080.60	3/2$^+$			
		2392	0.4	3958.7	3/2$^+$			
		2475.3	0.3	3875.75	5/2,(3/2$^-$)			
		2528	0.3	3822.6	1/2,3/2			
		2760	1.1	3590.35	5/2$^{(-)}$			
		2834	0.6	3517.08	5/2$^{(-)}$			
		2980	1.4	3370.56	3/2			
		2980	1.2	3370.52	1/2,3/2,5/2$^+$			
		3296	0.5	3054.22	5/2$^-$			
		3345	0.1	3005.45	3/2$^-$			
		3583	1.2	2767.32	(1/2)$^-$			

$^{47}_{23}V_{24}$-20

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Comments
6351.15	(3/2)	3628	2.9	2722.63	$5/2^-$	
		3911	0.9	2439.54	$5/2^+$	
		4139	7.1	2211.75	$1/2^-$	
		4175	0.9	2175.86	$5/2^-$	
		4268	11	2082.72	$3/2^-$	
		4383	2.3	1968.92	$3/2^+$	
		4690	3.4	1660.62	$1/2^+$	
		5690	1.8	660.358	$5/2^+$	
		6091	9.8	259.486	$3/2^+$	
		6204	0.6	145.821	$7/2^-$	
		6263	17	87.525	$5/2^-$	
		6350	28	0.	$3/2^-$	
6373.99	(1/2)	1831	3.5	4543.02	3/2,(1/2,5/2$^+$)	$\Sigma I\gamma$=0.4% to other bound states.
		2166	2.2	4207.10	3/2,(1/2,5/2)	
		2273	1.0	4100.31	$3/2^-$	
		2293	9	4080.60	$3/2^+$	
		2415	3.4	3958.7	$3/2^+$	
		2483	2.5	3890.1	$\leq 5/2^+$	
		2600	4.3	3773.4	(1/2)	
		3003	1.0	3370.56	3/2	
		3003	1.8	3370.52	1/2,3/2,5/2$^+$	
		3606	3.6	2767.32	$(1/2)^-$	
		4162	5.5	2211.75	$1/2^-$	
		4291	1.4	2082.72	$3/2^-$	
		4404	2.0	1968.92	$3/2^+$	
		4713	32	1660.62	$1/2^+$	
		6114	11	259.486	$3/2^+$	
		6373	15	0.	$3/2^-$	
6387.44	($5/2^+$)	1147	1.1	5240.0	$5/2^{(+)}$,($3/2^+$,$7/2^+$)	$\Sigma I\gamma$=7.9% to other bound states.
		1877.49	1.5	4510.01	5/2,($3/2^-$)	
		1933	1.3	4453.7	7/2	
		1981	1.2	4406.4		
		2402	5.1	3984.97	7/2,($3/2^+$,$5/2^+$)	
		2518	5.0	3869.0	5/2	
		2666	1.0	3721.29	7/2	
		2727	1.9	3659.71	(7/2)	
		2862	26	3524.60	$7/2^+$	
		3031	2.8	3355.49	$5/2^+$	
		3333	2.7	3054.22	$5/2^-$	
		3403	1.4	2984.29	$7/2^-$	
		3577	3.2	2810.04	$7/2^+$	
		3947	3.0	2439.54	$5/2^+$	

$^{47}_{23}V_{24}$-21

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
6387.44	(5/2$^+$)	4418	7.5	1968.92	3/2$^+$			
		5248	1.6	1138.55	7/2$^+$			
		5726	21	660.358	5/2$^+$			
		6299	3.1	87.525	5/2$^-$			
		6387	1.7	0.	3/2$^-$			
6394.12	5/2$^+$	1154	1.2	5240.0	5/2$^{(+)}$,(3/2$^+$,7/2$^+$)	D(+Q)	+0.02 *3*	A_2=0.46 *3* $\Sigma I\gamma$=4% to other bound states.
		1270	0.8	5123.86	7/2,(5/2$^+$)	D+Q		A_2=−0.13 *3* δ: −0.01 *2* or −8 *1* if J_f=7/2.
		1486	0.7	4907.6	5/2,(3/2$^+$,7/2$^+$)	D+Q	−0.06 *4*	A_2=0.38 *4*
		1584	0.4	4807.30	5/2	D+Q		A_2=0.48 *7* δ: +0.04 *7* or +1.2 *2* if J_f=5/2.
		1884.1	0.7	4510.01	5/2,(3/2$^-$)	D+Q		A_2=−0.17 *5* δ: +0.02 *4* or −12 *3* if J_f=7/2.
		1940	1.2	4453.7	7/2	D+Q		A_2=−0.16 *3* δ: +0.01 *4* or <−7.
		2244	0.1	4150.35	5/2$^{(-)}$	D+Q	−0.16 *2*	A_2=−0.68 *3*
		2314	1.1	4080.60	3/2$^+$			
		2409	3.1	3984.97	7/2,(3/2$^+$,5/2$^+$)	D(+Q)	+0.02 *3*	A_2=−0.35 *6*
		2441	1.0	3952.6	7/2,(5/2$^-$)			
		2672	6.1	3721.29	7/2	D+Q		A_2=−0.25 *2* δ: +0.08 *2* or <−15.
		2699	1	3694.4	5/2$^{(+)}$,(3/2$^+$)			
		2734	3.4	3659.71	(7/2)	D+Q	+0.02 *1*	A_2=−0.17 *2*
		2869	25	3524.60	7/2$^+$	D+Q	+0.02 *1*	A_2=−0.17 *1*
		3038	8.4	3355.49	5/2$^+$	D(+Q)	+0.02 *2*	A_2=0.47 *2*
		3146	0.7	3247.73	7/2$^-$	D+Q	−0.09 *6*	A_2=−0.01 *8*
		3583	10	2810.04	7/2$^+$	D+Q	−0.04 *1*	A_2=−0.08 *1*
		3671	0.7	2722.63	5/2$^-$	D(+Q)	−0.09 *10*	A_2=0.35 *11*
		3954	4.4	2439.54	5/2$^+$	D+Q	+0.04 *3*	A_2=0.48 *2*
		4311	3.7	2082.72	3/2$^-$	D+Q	+0.04 *1*	A_2=−0.32 *2*
		4424	6.5	1968.92	3/2$^+$	D+Q	−0.01 *1*	A_2=−0.40 *1*
		5733	12	660.358	5/2$^+$			
		6134	2.5	259.486	3/2$^+$	D+Q	+0.13 *1*	A_2=−0.13 *3*
		6247	0.7	145.821	7/2$^-$	D+Q	−0.16 *4*	A_2=0.08 *5*
		6306	0.5	87.525	5/2$^-$	D+Q	+0.26 *12*	A_2=0.67 *7*
6426.04	3/2$^{(-)}$	2275	2.4	4150.35	5/2$^{(-)}$	D+Q		A_2=−0.17 *4* $\Sigma I\gamma$=3.2% to other bound states. δ: +0.06 *3* or −7 *1* if J_f=5/2.
		2307	1.6	4118.12	3/2,(1/2,5/2)	D+Q		A_2=0.30 *5* δ: −0.06 *4* or +5 *1* if J_f=3/2.

$^{47}_{23}V_{24}$-22

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
6426.04	$3/2^{(-)}$	2325	2.3	4100.31	$3/2^-$			
		2550.2	2.1	3875.75	$5/2,(3/2^-)$	D+Q		A_2=−0.11 *5* δ: +0.01 *5* or −5 *1* if J_f=5/2.
		2835	2.3	3590.35	$5/2^{(-)}$	D+Q		A_2=−0.09 *5* δ: −0.01 *4* or −4.5 *9*.
		3055	1.8	3370.56	3/2			
		3122	1.0	3303.53	3/2			
		3659	1.1	2767.32	$(1/2)^-$			
		4214	37	2211.75	$1/2^-$	D+Q		A_2=−0.58 *1* δ: −0.06 *1* or −1.53 *2*.
		4250	30	2175.86	$5/2^-$	D+Q	−0.06 *1*	A_2=−0.03 *1*
		4457	3.9	1968.92	$3/2^+$	D+Q		A_2=0.37 *4* δ: −0.01 *3* or 4.1 *5*.
		4765	1.9	1660.62	$1/2^+$	D+Q		A_2=−0.58 *5* δ: −0.06 *4* or −1.5 *1*.
		5765	1.0	660.358	$5/2^+$			
		6166	0.9	259.486	$3/2^+$	D+Q		A_2=0.14 *13* δ: −0.16 *9* or >+6.
		6279	0.3	145.821	$7/2^-$	Q+O		A_2=−0.32 *20* δ: +0.4 *3* or <−2.1.
		6338	3.6	87.525	$5/2^-$	D+Q		A_2=0.06 *5* δ: −0.15 *5* or −2.7 *4*.
		6425	3.1	0.	$3/2^-$	D(+Q)	<+0.1	A_2=0.92 *7*
6427.56	5/2	2346	1.1	4080.60	$3/2^+$			ΣIγ=9.3% to other bound states.
		2706	1.0	3721.29	7/2			
		2902	2.1	3524.60	$7/2^+$			
		3987	6.7	2439.54	$5/2^+$			
		4458	21	1968.92	$3/2^+$			
		5288	4.5	1138.55	$7/2^+$			
		5766	26	660.358	$5/2^+$			
		6167	3.1	259.486	$3/2^+$			
		6339	25	87.525	$5/2^-$			
6475.47	$5/2^{(+)}$	1252	0.5	5222.71	$3/2,(5/2^+)$			A_2=−0.23 *5* Mult.,δ: D+Q with δ=0.08 *3* for J_f=3/2. ΣIγ=6% to other bound states.
		2394	2.5	4080.60	$3/2^+$	D(+Q)	+0.00 *1*	A_2=−0.38 *2*
		2490	0.6	3984.97	$7/2,(3/2^+,5/2^+)$			
		2516	1.1	3958.7	$3/2^+$			
		2522	2.4	3952.6	$7/2,(5/2^-)$			
		2781	1.1	3694.4	$5/2^{(+)},(3/2^+)$	D+Q		A_2=0.51 *15* δ: +0.07 *6* or +1.0 *2* if J_f=5/2.
		2815	2.6	3659.71	(7/2)			

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

γ(^{47}V) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
6475.47	5/2$^{(+)}$	3171	19	3303.53	3/2	D+Q	−0.10 *1*	A_2=−0.57 *1*
		3227	0.5	3247.73	7/2$^-$	D+Q		A_2=−0.27 *13* δ: +0.09 *9* or <−15.
		3665	3.3	2810.04	7/2$^+$			
		4035	1.6	2439.54	5/2$^+$	D(+Q)	+0.04 *6*	A_2=0.49 *5*
		4392	4.2	2082.72	3/2$^-$	D+Q	+0.03 *1*	A_2=−0.33 *2*
		4506	20	1968.92	3/2$^+$	D+Q	+0.02 *1*	A_2=−0.35 *1*
		5336	2.0	1138.55	7/2$^+$	M1+E2	−1.00 *19*	A_2=0.49 *3*; A_4=0.10 *3*
		5814	19	660.358	5/2$^+$	D+Q	−0.10 *2*	A_2=0.32 *2*
		6215	7.0	259.486	3/2$^+$	D+Q	−0.47 *2*	A_2=−1.04 *2*; A_4=0.12 *2*
		6329	0.4	145.821	7/2$^-$	D(+Q)	−0.07 *10*	A_2=−0.04 *13*
		6475	7.0	0.	3/2$^-$	D+Q	+0.07	A_2=−0.25 *1*
6679.38	7/2$^{(-)}$	1681	0.3	4998.7	5/2,(7/2)			A_2=−0.30 *9* ΣIγ=0.9% to other bound states. Mult.,δ: D+(Q) with δ=+0.02 *4* is calculated for J=5/2.
		1946	0.8	4733.8	9/2$^{(-)}$	D+Q		A_2=−0.11 *5* δ: −0.04 *4* or −11 *4*.
		2111	0.4	4568.68	5/2	D+Q	+0.19 *6*	A_2=0.03 *11*
		2277	0.4	4402.6	7/2,(5/2,9/2)	D+Q		A_2=0.37 *12* δ: −0.12 *14* or +1.0 *3* for J_f=7/2.
		2457	1.4	4222.48	5/2	D+Q	+0.05 *2*	A_2=−0.24 *4*
		2803	1.3	3876.0	7/2$^-$	D(+Q)	+0.03 *6*	A_2=0.48 *4*
		2958	0.4	3721.29	7/2	D(+Q)	+0.3 *3*	A_2=0.64 *13*
		2961	0.6	3718.0	7/2,(5/2,9/2$^+$)	D+Q		A_2=0.40 *7* δ: −0.08 *9* or +0.9 *2*.
		3089	0.5	3590.35	5/2$^{(-)}$	D+Q		A_2=−0.40 *10* δ: −0.03 *6* or −3.1 *7*.
		3162	2.3	3517.08	5/2$^{(-)}$	D+Q	−0.06 *2*	A_2=−0.46 *3*
		3432	3.7	3247.73	7/2$^-$	D(+Q)	−0.02 *2*	A_2=0.45 *2*
		3625	3.4	3054.22	5/2$^-$	D+Q	+0.03 *1*	A_2=−0.28 *2*
		3695	22	2984.29	7/2$^-$	D(+Q)	+0.02 *2*	A_2=0.48 *1*
		3932	6.6	2747.12	9/2$^-$	D+Q	+0.02 *1*	A_2=−0.19 *1*
		3957	9.2	2722.63	5/2$^-$	D(+Q)	−0.00 *1*	A_2=−0.36 *1*
		4240	4.2	2439.54	5/2$^+$	D(+Q)	−0.01 *1*	A_2=−0.38 *2*
		4503	0.4	2175.86	5/2$^-$	D(+Q)	−0.06 *6*	A_2=−0.46 *11*
		4932	1.4	1746.96	9/2$^+$	D(+Q)	−0.00 *3*	A_2=−0.15 *5*
		5407	19	1271.80	9/2$^-$	D+Q	−0.04 *1*	A_2=−0.09 *1*
		6533	10	145.821	7/2$^-$	D+Q	−0.21 *2*	A_2=0.27 *2*
		6591	10	87.525	5/2$^-$	D+Q	−0.03 *1*	A_2=0.41 *1*
6682.84	3/2$^{(-)}$	1440[be]	0.7[b]	5240.0	5/2$^{(+)}$,(3/2$^+$,7/2$^+$)	D+Q[b]	[b]	ΣIγ=4.2% to other bound states. δ: −0.07 *2* or −2.9 *3*.

$^{47}_{23}V_{24}$-24

γ(^{47}V) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	Comments
6682.84	3/2$^{(-)}$	1541[b]	0.4[b]	5142.16	3/2,(1/2$^-$,5/2$^-$)	D+Q[b]	δ: −0.00 *3* or −3.7 *7*.
		2114[b]	2.1[b]	4568.68	5/2		
		2173[dbe]	4.2[db]	4510.01	5/2,(3/2$^-$)		
		2173[dbe]	4.2[db]	4509.52	7/2,(3/2,5/2$^+$)		
		2411[dbe]	2.8[db]	4271.75	(1/2)	D+Q[b]	
		2411[dbe]	2.8[db]	4271.60	7/2,(3/2$^+$,5/2$^+$)	D+Q[b]	
		2460[b]	12.3[b]	4222.48	5/2	D+Q[b]	δ: +0.00 *1* or +4.5 *3*.
		2791[b]	1.4[b]	3892.26	3/2,(5/2$^+$)		
		3092[b]	6.0[b]	3590.35	5/2$^{(-)}$	D+Q[b]	δ: −0.02 *1* or +5.4 *3*.
		3166[b]	6.9[b]	3517.08	5/2$^{(-)}$	D+Q[b]	δ: +0.01 *3* or +4.7 *9*.
		3312[dbe]	6.6[db]	3370.56	3/2	D+Q[b]	
		3312[dbe]	6.6[db]	3370.52	1/2,3/2,5/2$^+$	D+Q[b]	
		3320[b]	6.4[b]	3362.65	1/2$^{(-)}$	D+Q[b]	δ: +0.07 *1* or +1.5 *1*.
		3629[b]	1.1[b]	3054.22	5/2$^-$		
		3677[b]	12.0[b]	3005.45	3/2$^-$	D+Q[b]	δ: −0.01 *2* or −4.0 *3*.
		3916[b]	1.1[b]	2767.32	(1/2)$^-$		
		3960[b]	4.5[b]	2722.63	5/2$^-$	D+Q[b]	δ: +0.04 *2* or +3.7 *2*.
		4507[b]	4.2[b]	2175.86	5/2$^-$		
		4600[b]	0.9[b]	2082.72	3/2$^-$	D+Q[b]	δ: −0.11 *6* or −2.5 *6*.
		4714[b]	0.5[b]	1968.92	3/2$^+$	D+Q[b]	δ: +0.02 *3* or −4.2 *5*.
		5022[b]	1.2[b]	1660.62	1/2$^+$	D+Q[b]	δ: −0.02 *3* or +1.8 *1*.
		6022[b]	3.9[b]	660.358	5/2$^+$	D+Q[b]	δ: +0.00 *1* or +4.6 *4*.
		6595[b]	2.8[b]	87.525	5/2$^-$	D+Q[b]	δ: +0.11 *3* or +2.9 *4*.
		6683[b]	14.1[b]	0.	3/2$^-$	D+Q[b]	δ: +0.13 *1* or −7.9 *8*.
6692.86	1/2$^+$	2486	1.4	4207.10	3/2,(1/2,5/2)		$\Sigma I\gamma$=4.6% to other bound states.
		2734	1.0	3958.7	3/2$^+$		
		2803	1.7	3890.1	≤5/2$^+$		
		3322	1.5	3370.56	3/2		
		4610	3.1	2082.72	3/2$^-$		
		5032	37	1660.62	1/2$^+$		
		6433	49	259.486	3/2$^+$		
6699	(3/2$^-$)	1460[b]	1.0[b]	5240.0	5/2$^{(+)}$,(3/2$^+$,7/2$^+$)		$\Sigma I\gamma$=3.9% to other bound states.
		2131[b]	1.8[b]	4568.68	5/2	D+Q[b]	δ: −0.00 *2* or +4.5 *4*.

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13 (continued)

$\gamma(^{47}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
6699	(3/2$^-$)	2428[dbe]	1.2[db]	4271.75	(1/2)			
		2428[dbe]	1.2[db]	4271.60	7/2,(3/2$^+$,5/2$^+$)			
		2477[b]	7.7[b]	4222.48	5/2	D+Q[b]	[b]	δ: −0.01 *2* or +4.8 *2*.
		3109[b]	4.1[b]	3590.35	5/2$^{(-)}$	D+Q[b]	[b]	δ: −0.06 *2* or +6.6 *8*.
		3182[b]	5.3[b]	3517.08	5/2$^{(-)}$	D+Q[b]	[b]	δ: −0.03 *1* or +5.2 *3*.
		3329[dbe]	5.5[db]	3370.56	3/2	D+Q[b]	[bc]	
		3329[dbe]	5.5[db]	3370.52	1/2,3/2,5/2$^+$	D+Q[b]	[c]	
		3645[b]	4.2[b]	3054.22	5/2$^-$	D+Q[b]	[b]	δ: +0.03 *3* or +4.1 *4*.
		3694[b]	2.3[b]	3005.45	3/2$^-$			
		3932[b]	2.2[b]	2767.32	(1/2)$^-$	D+Q[b]	[b]	δ: +0.01 *2* or +1.7 *1*.
		4523[b]	2.1[b]	2175.86	5/2$^-$			
		4617[b]	13.0[b]	2082.72	3/2$^-$	D+Q[b]	[b]	δ: +0.04 *2* or −4.7 *6*.
		6039[b]	1.7[b]	660.358	5/2$^+$			
		6612[b]	43.8[b]	87.525	5/2$^-$	D+Q[b]	[b]	δ: −0.06 *1* or +6.5 *3*.
6953.4	9/2$^+$	3001	13	3952.6	7/2,(5/2$^-$)			
		5206	61	1746.96	9/2$^+$	M1+E2	−0.18 *3*	
		5658	9	1294.96	11/2$^-$	D(+Q)	+0.00 *7*	
		5681	5	1271.80	9/2$^-$	D+Q		δ: −0.2 *2* or −0.8 *4*.
		6807	12	145.821	7/2$^-$	D(+Q)	+0.03 *4*	

[†] Nominal energy obtained by evaluator from decay scheme of 1986De13.

[‡] % photon branching ratio from each state or resonance. Upper limits correspond to two standard deviations for unobserved transitions. Uncertainties for the primary γ branching ratio range from a few percent for strong transitions to 50% for the weak ones.

[#] From $\gamma(\theta)$ and comparison to RUL. Other δ's considered unlikely by evaluator from comparison to RUL and adopted J^π have been omitted.

[@] If J_i=5/2.

[&] If J_i=3/2.

[a] If J_f=1/2.

[b] From 1973Sc29 (Ge(Li) (55°); NaI (0°, ±35°, ±55°, ±90°)); Iγ renormalized to % photon branchings by evaluator.

[c] δ(2411)=+0.14 *4* or +13 *+14−5*, δ(3317)=+0.07 *4* or −5.4 *10*, δ(3329)=−0.04 *1* or −3.3 *2*,

[d] Multiply placed with undivided intensity.

[e] Placement of transition in the level scheme is uncertain.

$^{47}_{23}V_{24}$-26

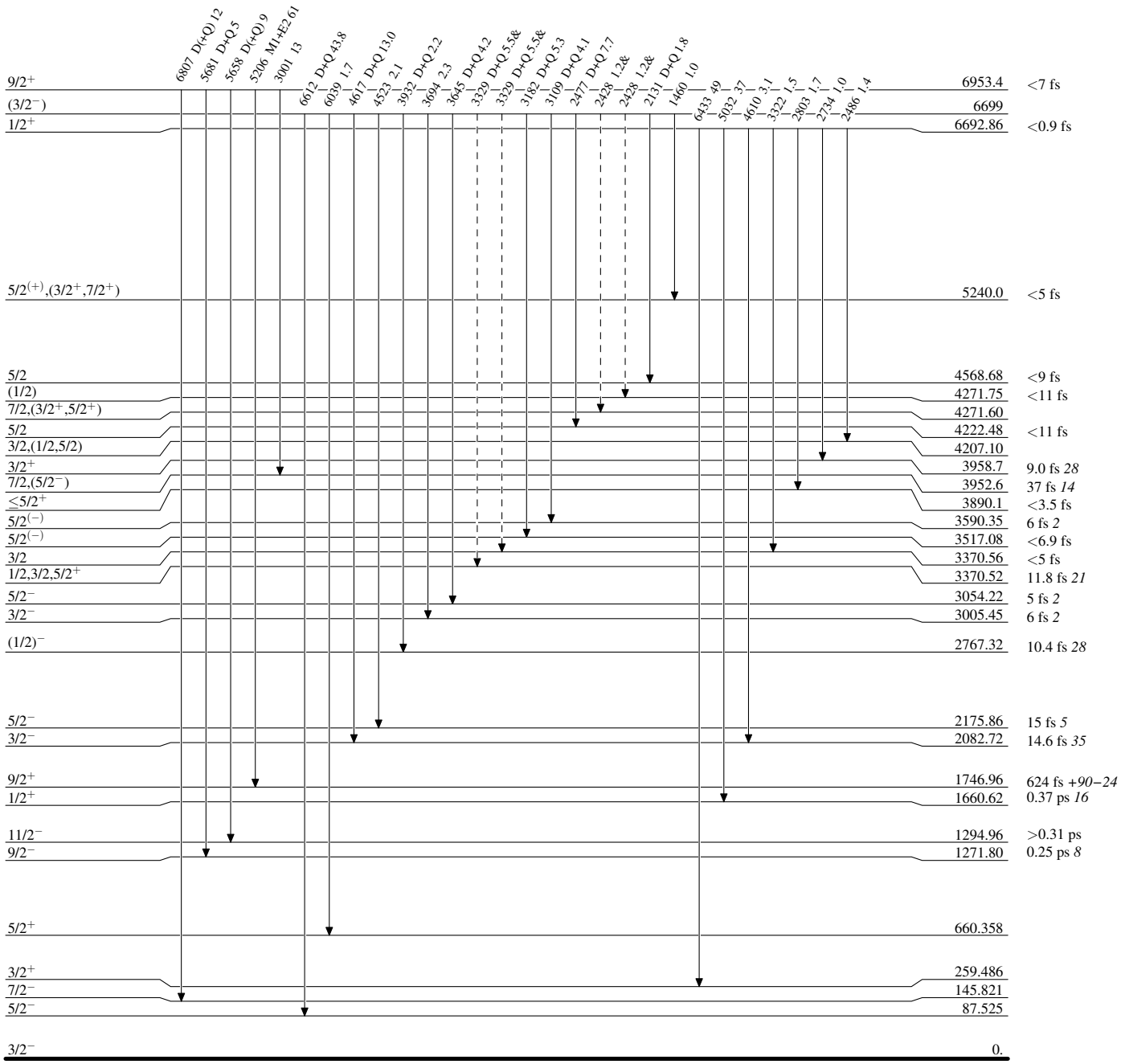
^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Legend

Level Scheme

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

– – – – – – ► γ Decay (Uncertain)



$^{47}_{23}V_{24}$

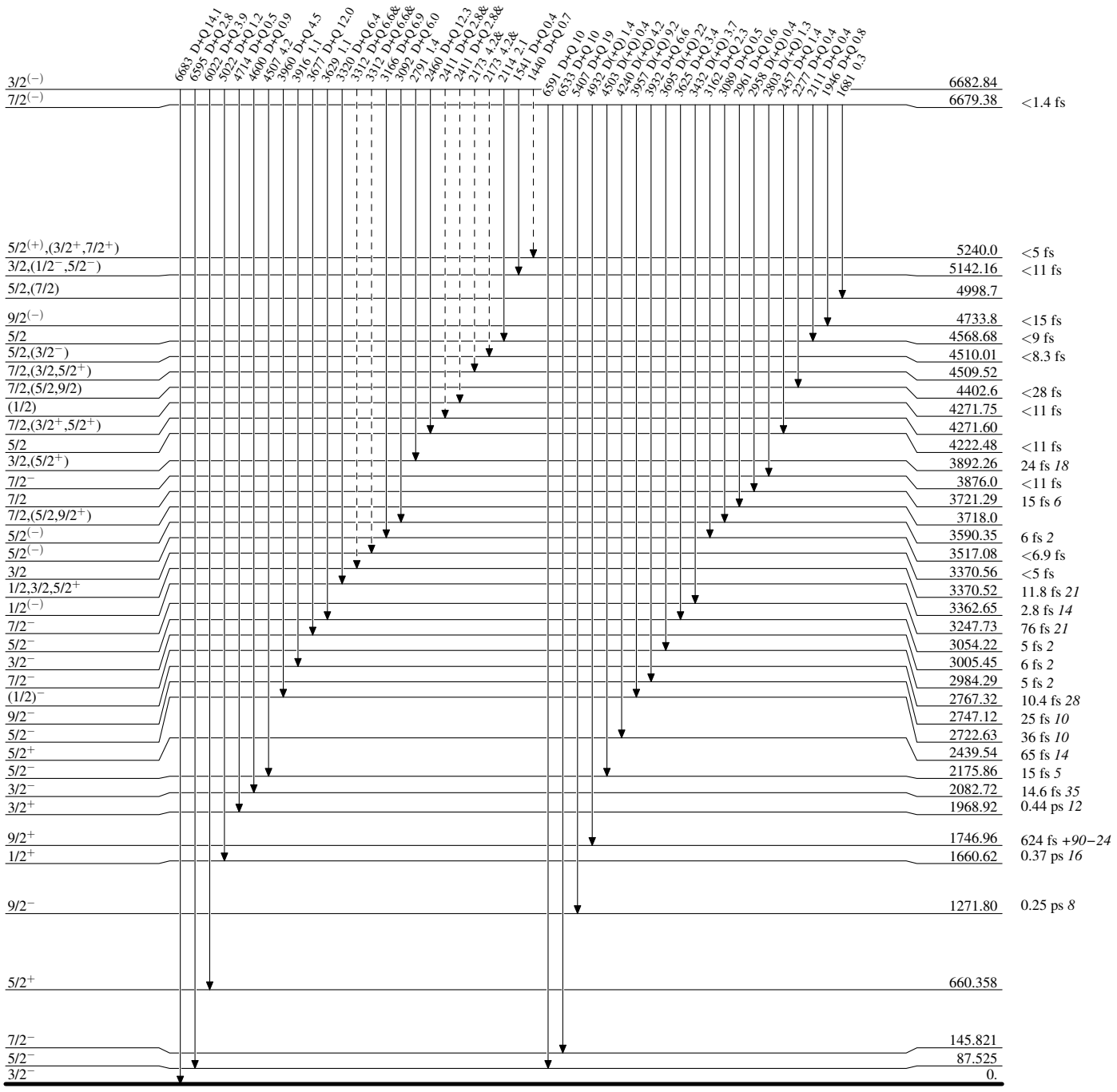
^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

– – – – – – ► γ Decay (Uncertain)

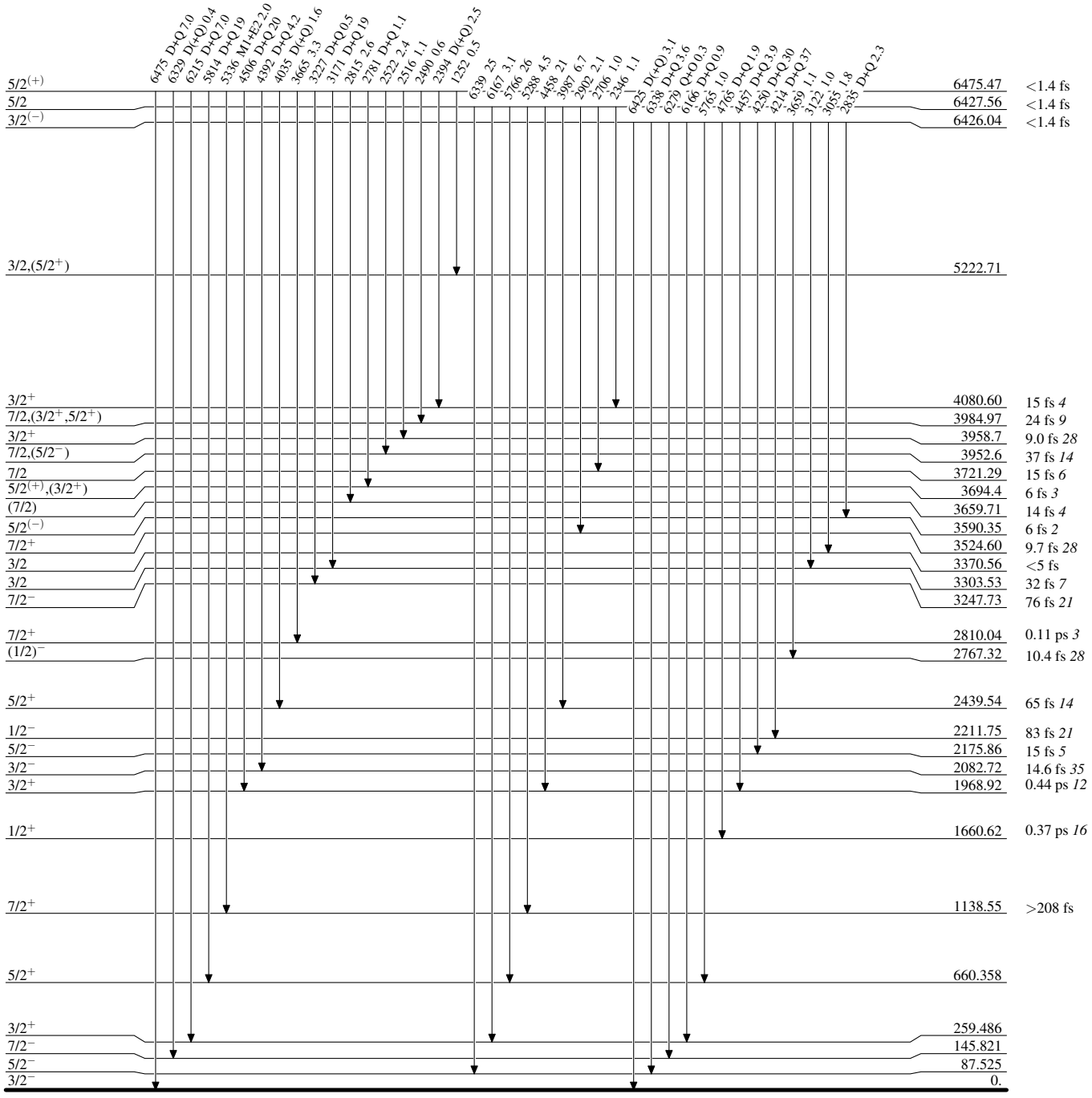


$^{47}_{23}V_{24}$

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

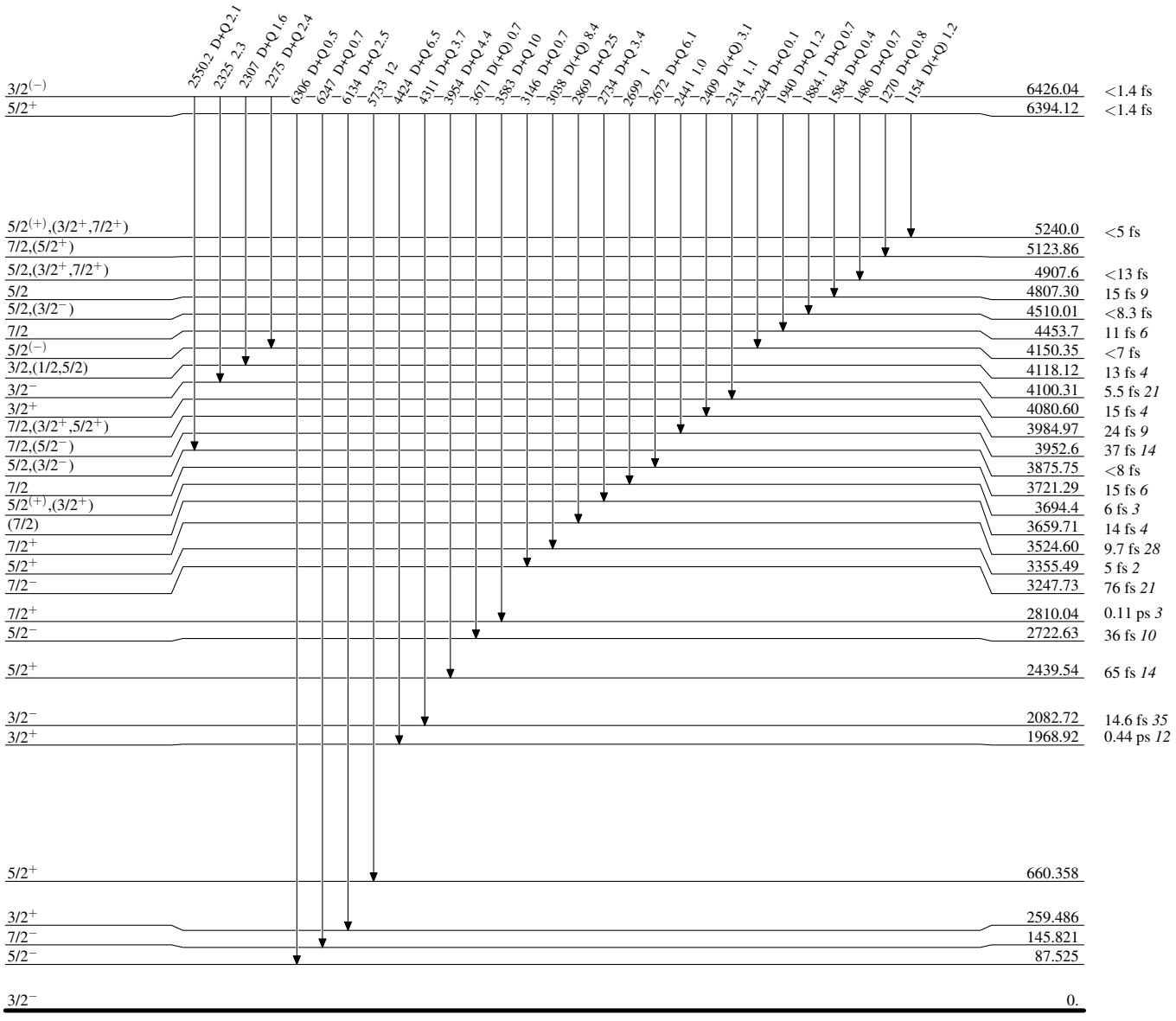


$^{47}_{23}V_{24}$

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

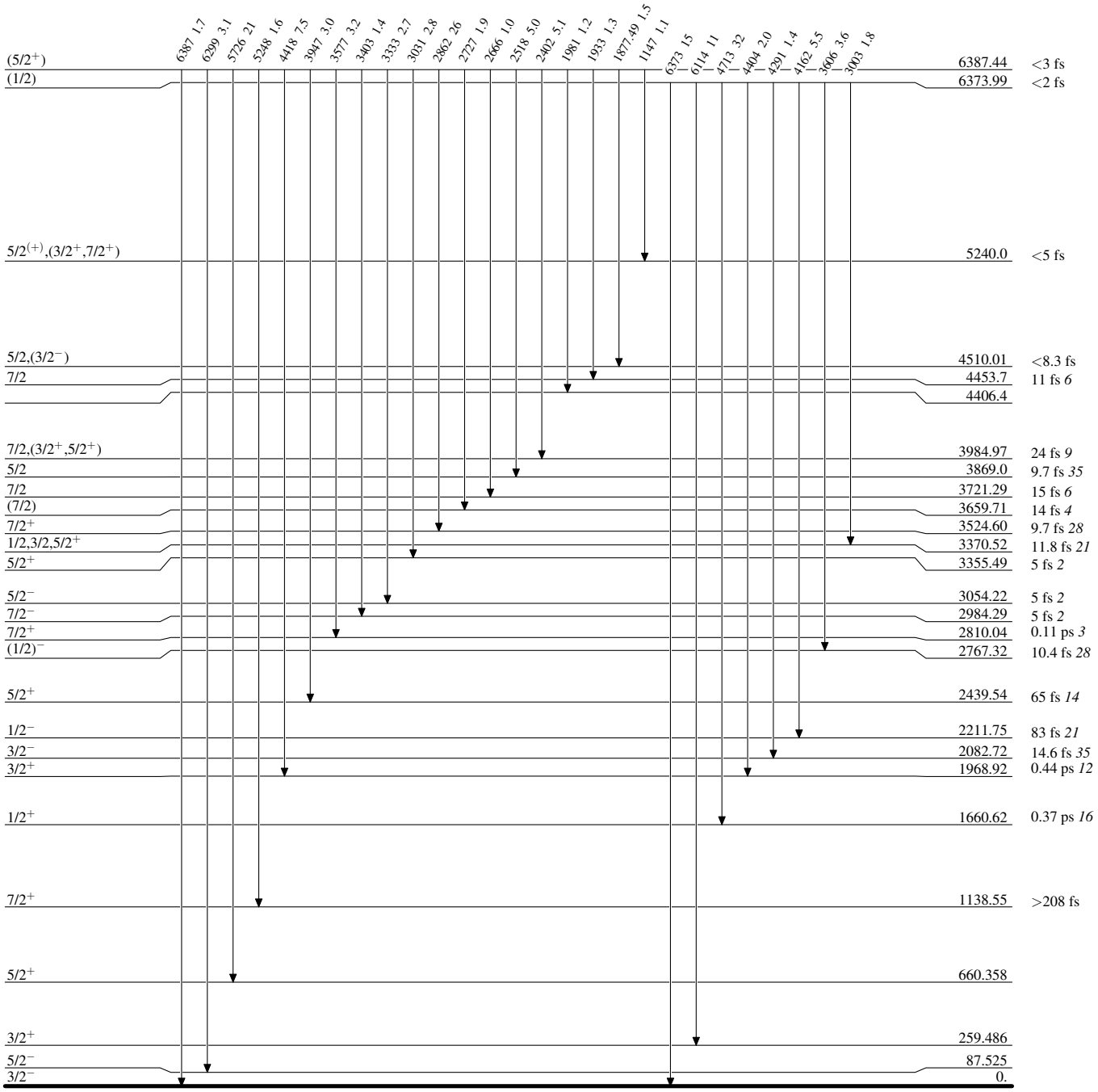


$^{47}_{23}V_{24}$

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

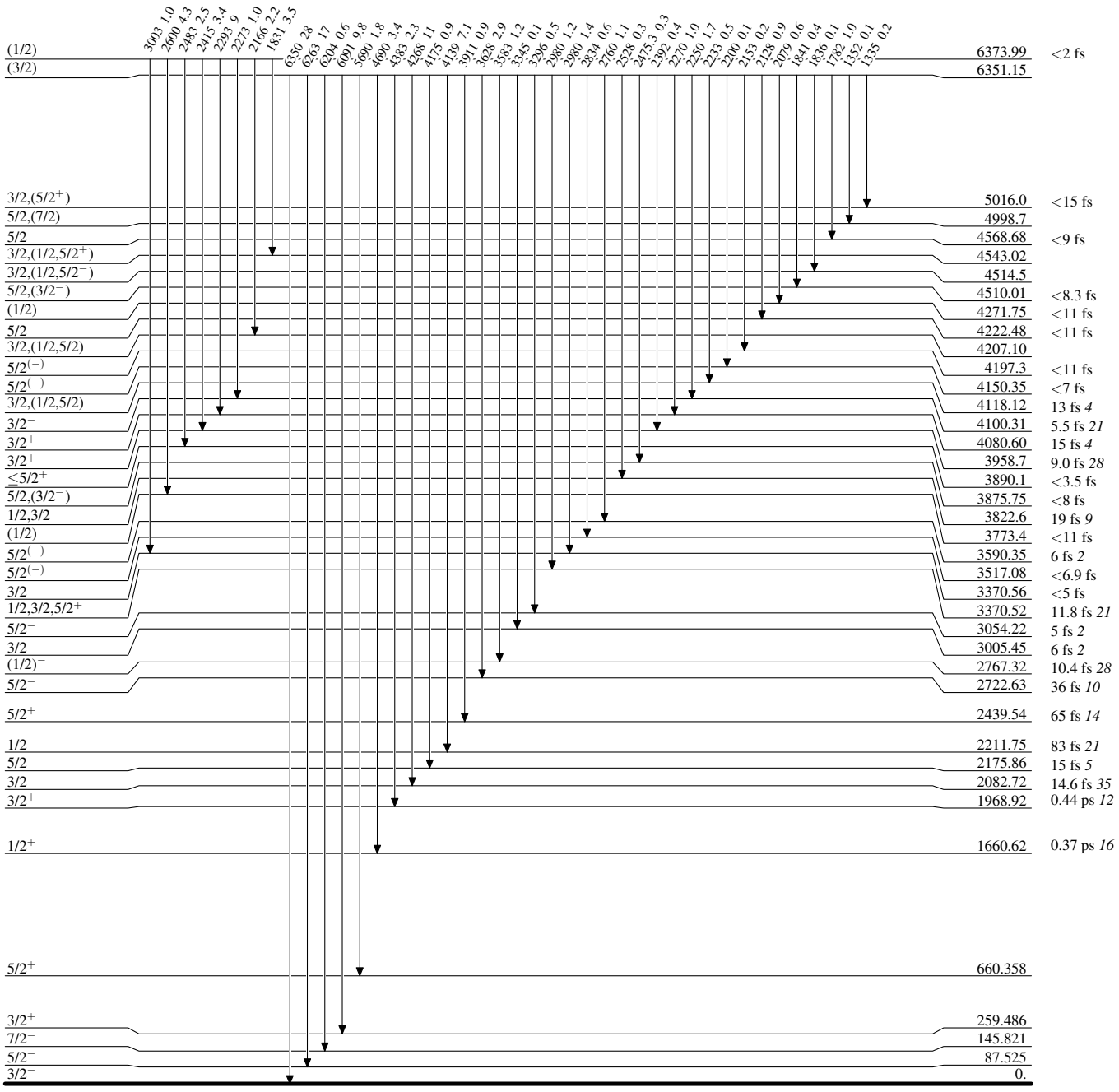


$^{47}_{23}V_{24}$

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

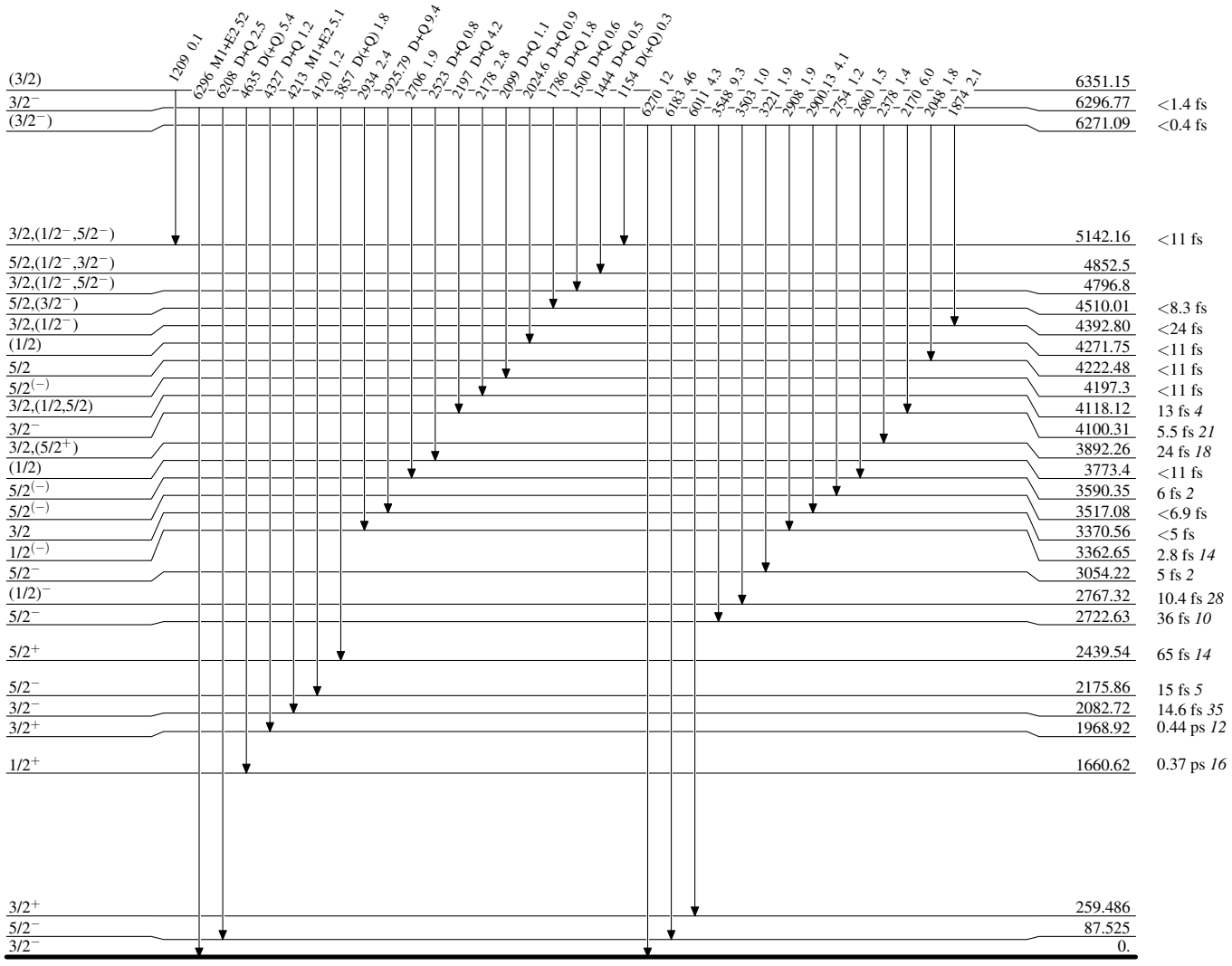


$^{47}_{23}V_{24}$

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

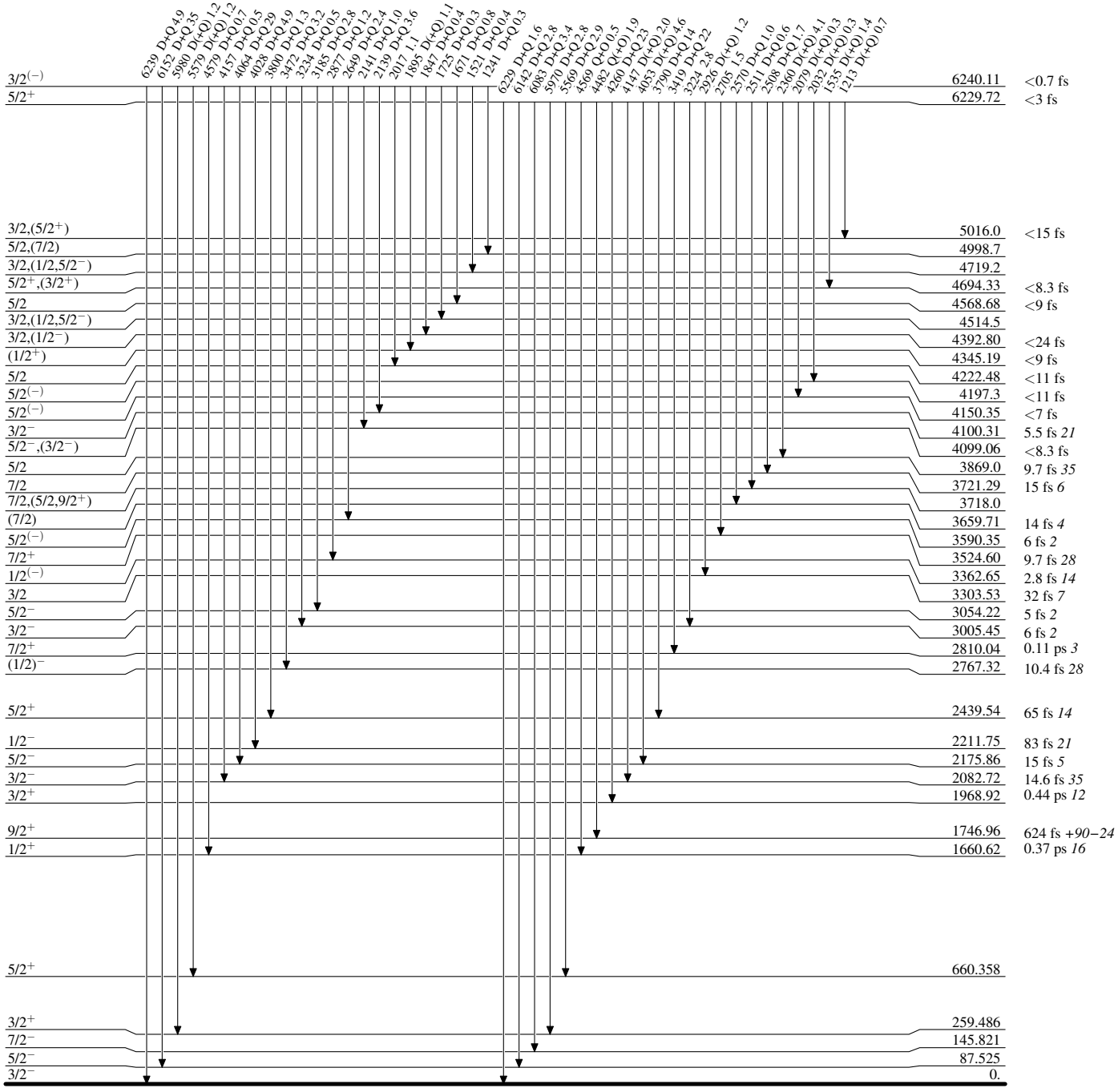


$^{47}_{23}V_{24}$

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

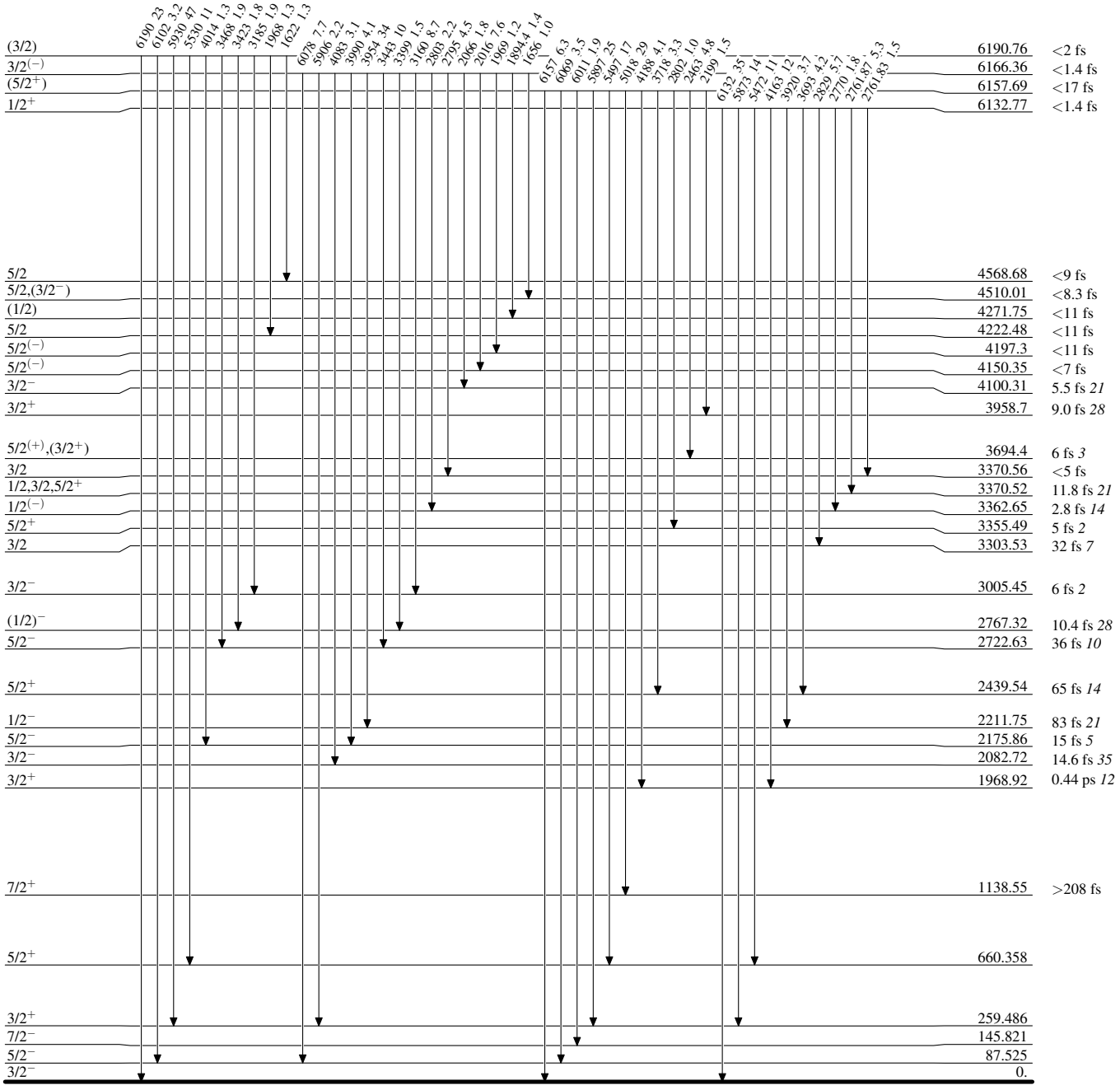


$^{47}_{23}V_{24}$

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

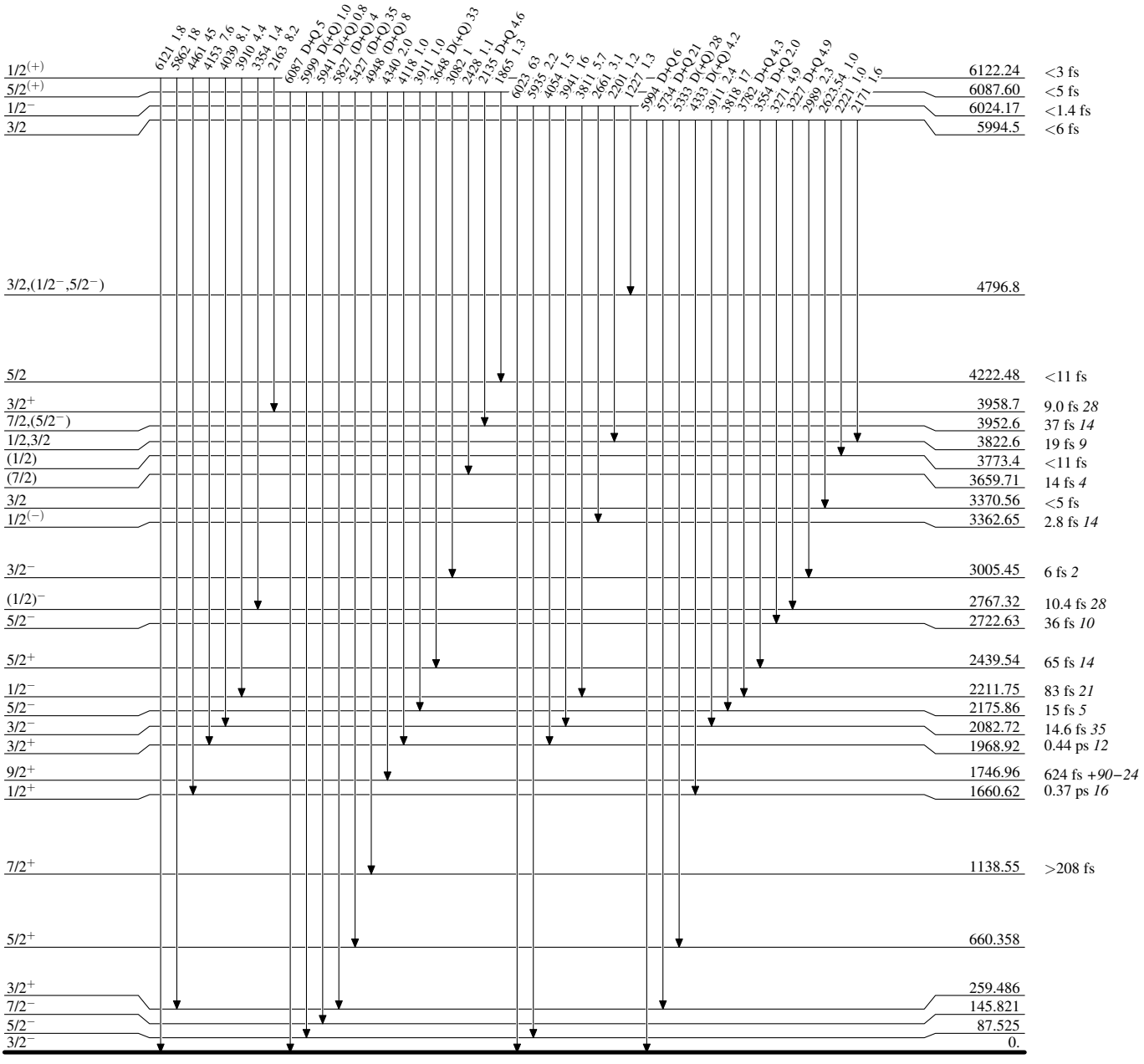


$^{47}_{23}V_{24}$

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

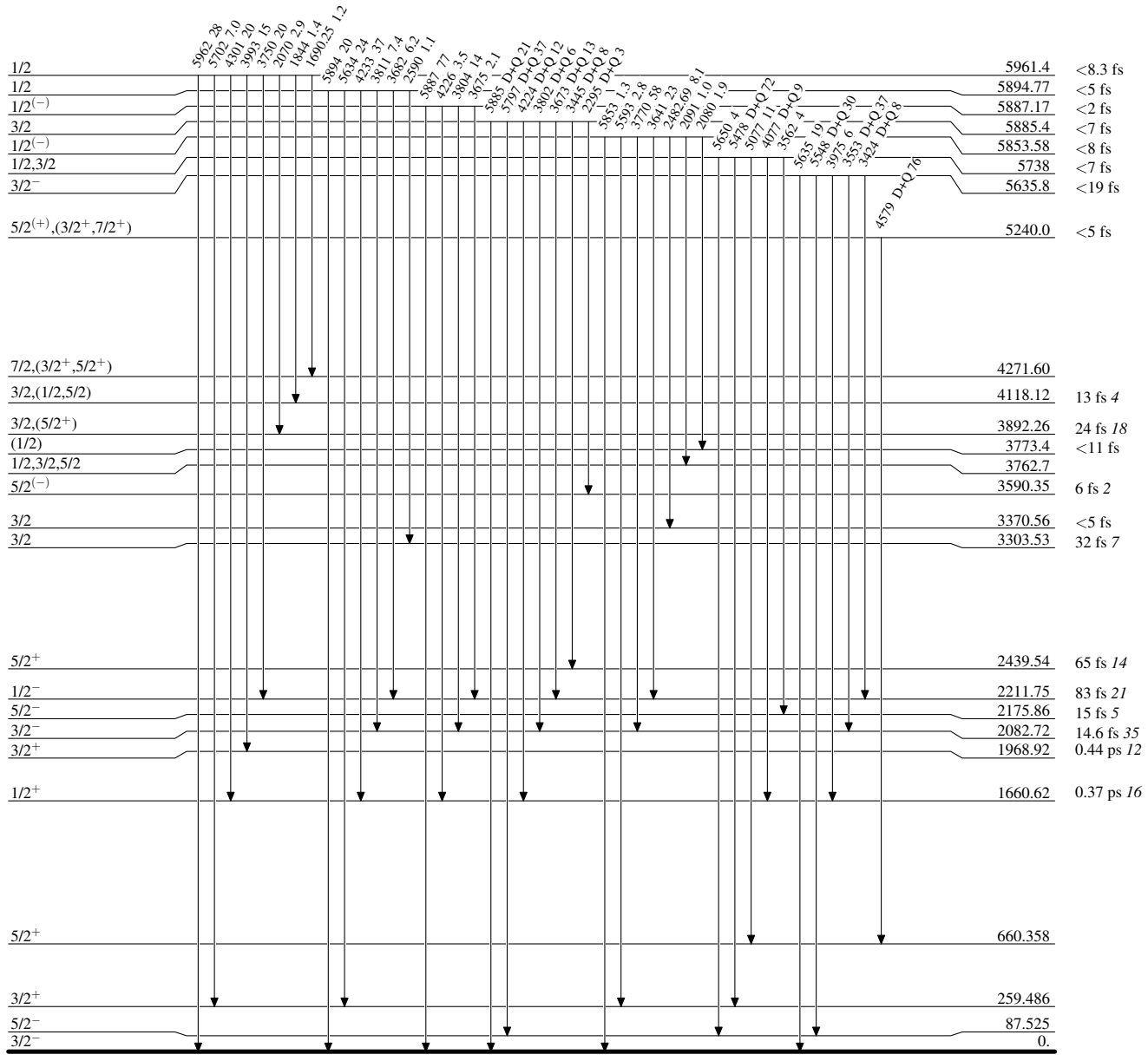


$^{47}_{23}V_{24}$

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given



$^{47}_{23}V_{24}$

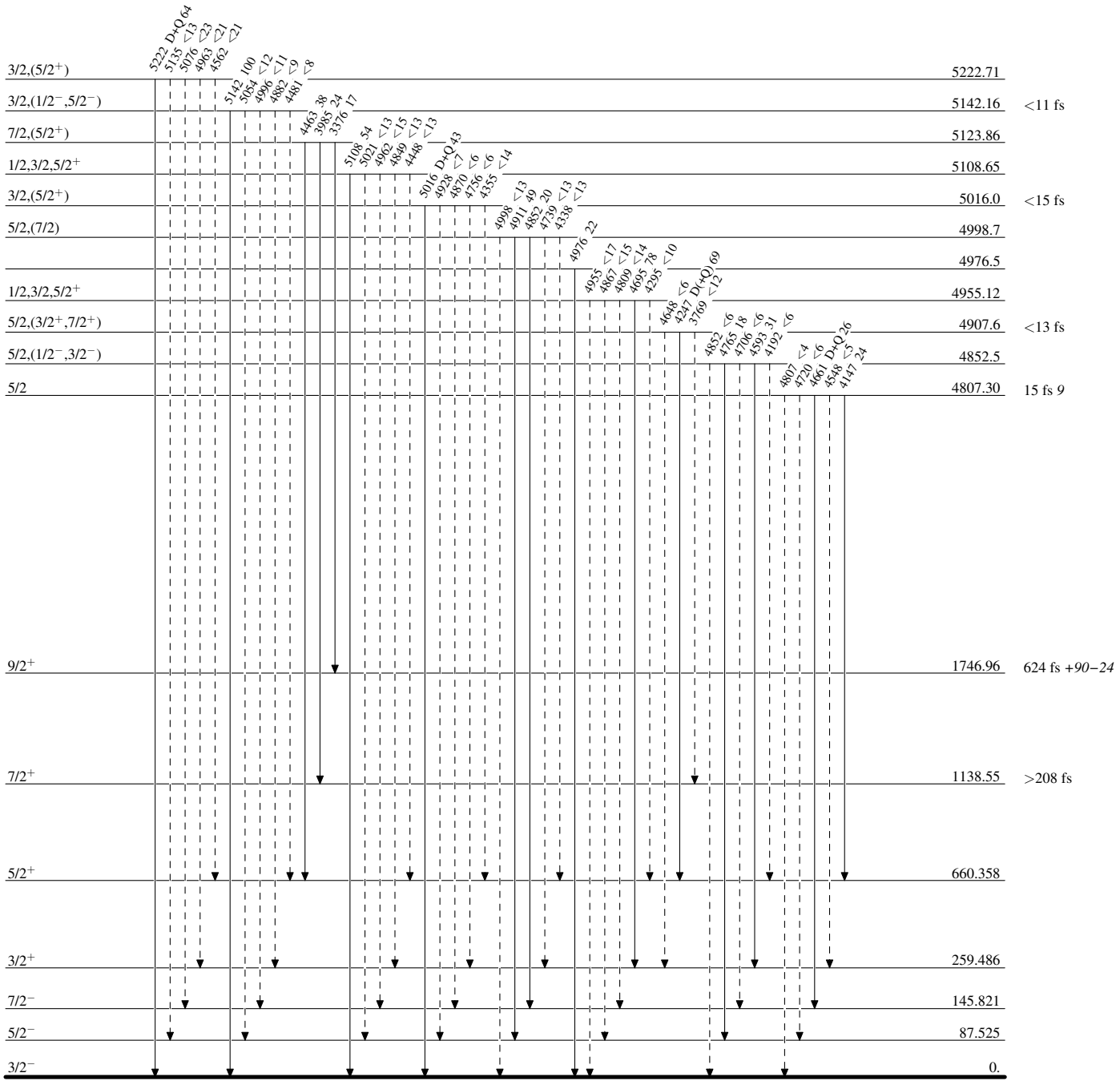
^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

– – – – – – ► γ Decay (Uncertain)



$^{47}_{23}V_{24}$

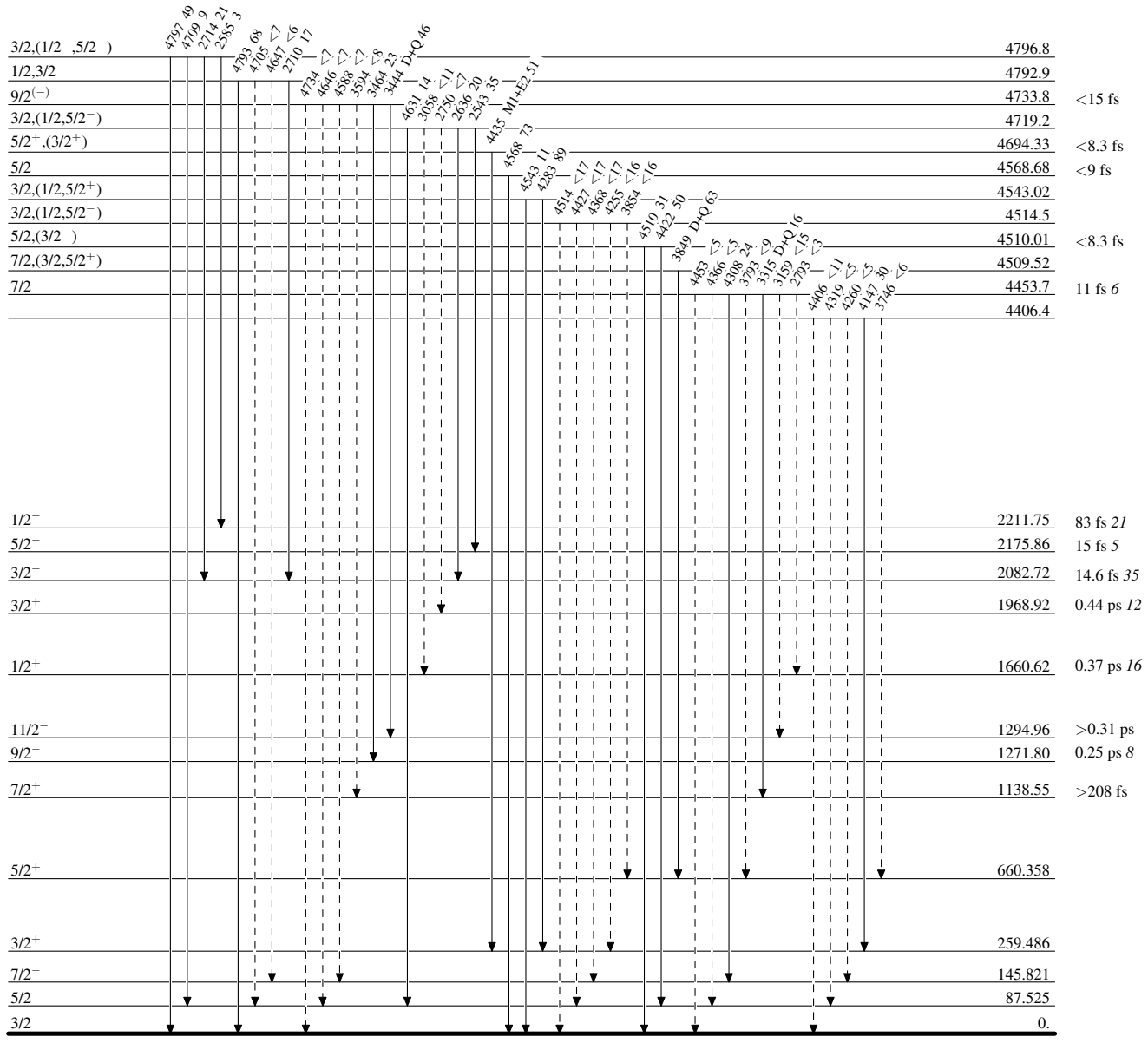
^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

– – – – – – ► γ Decay (Uncertain)



$^{47}_{23}V_{24}$

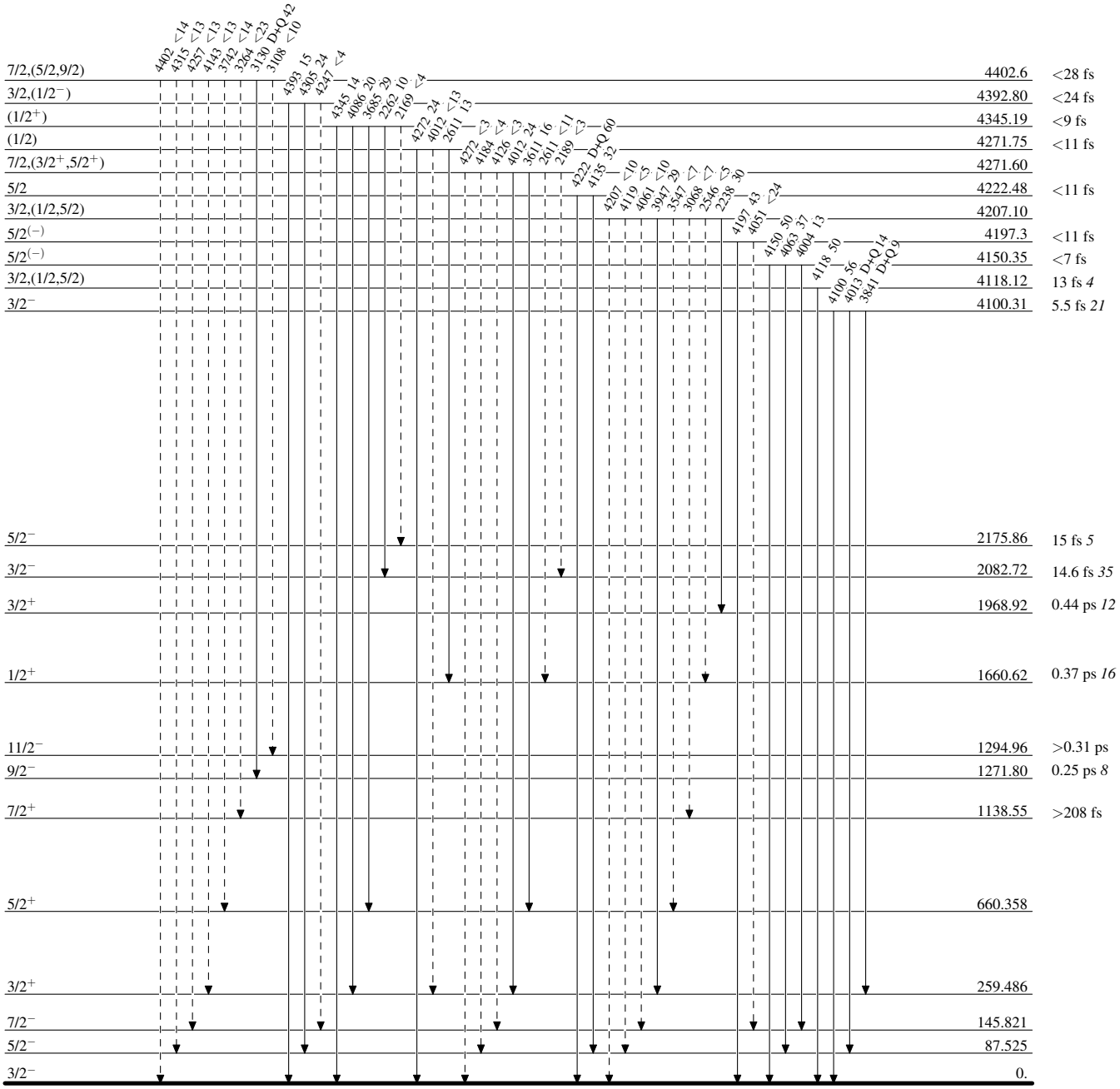
^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

– – – – – – ► γ Decay (Uncertain)



$^{47}_{23}V_{24}$

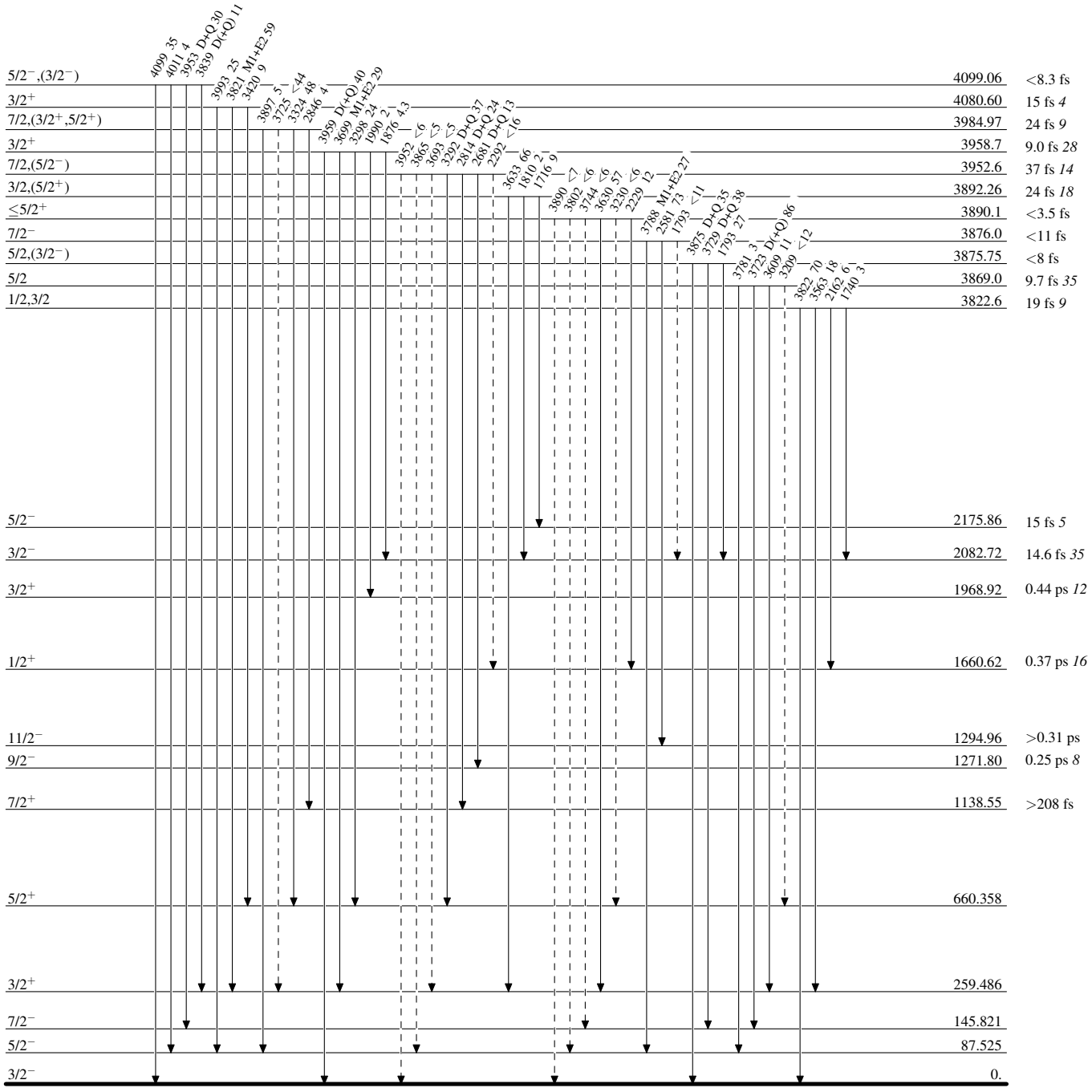
^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

– – – – – – ► γ Decay (Uncertain)



$^{47}_{23}V_{24}$

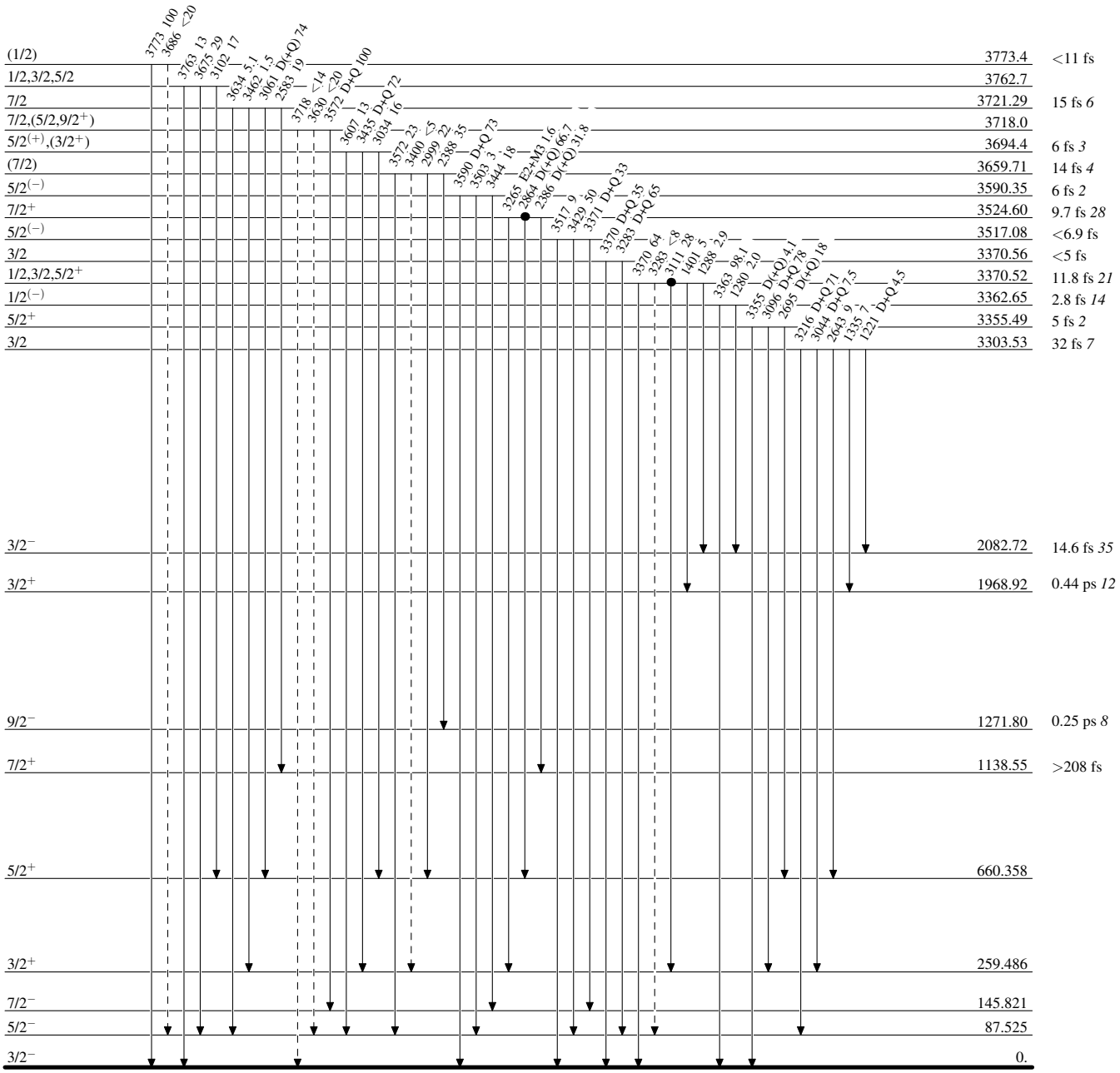
^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)
Coincidence



$^{47}_{23}V_{24}$

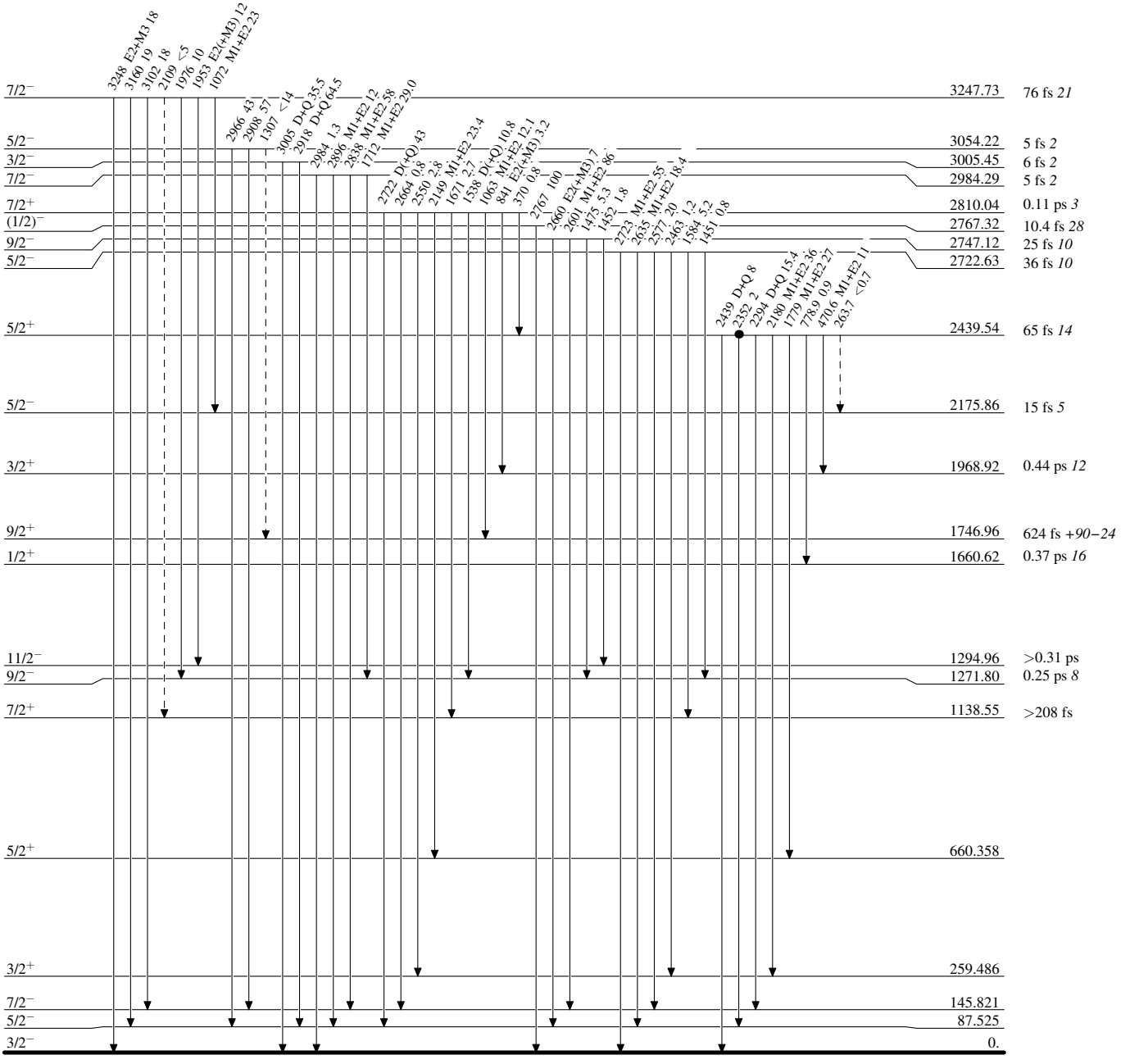
^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)
Coincidence



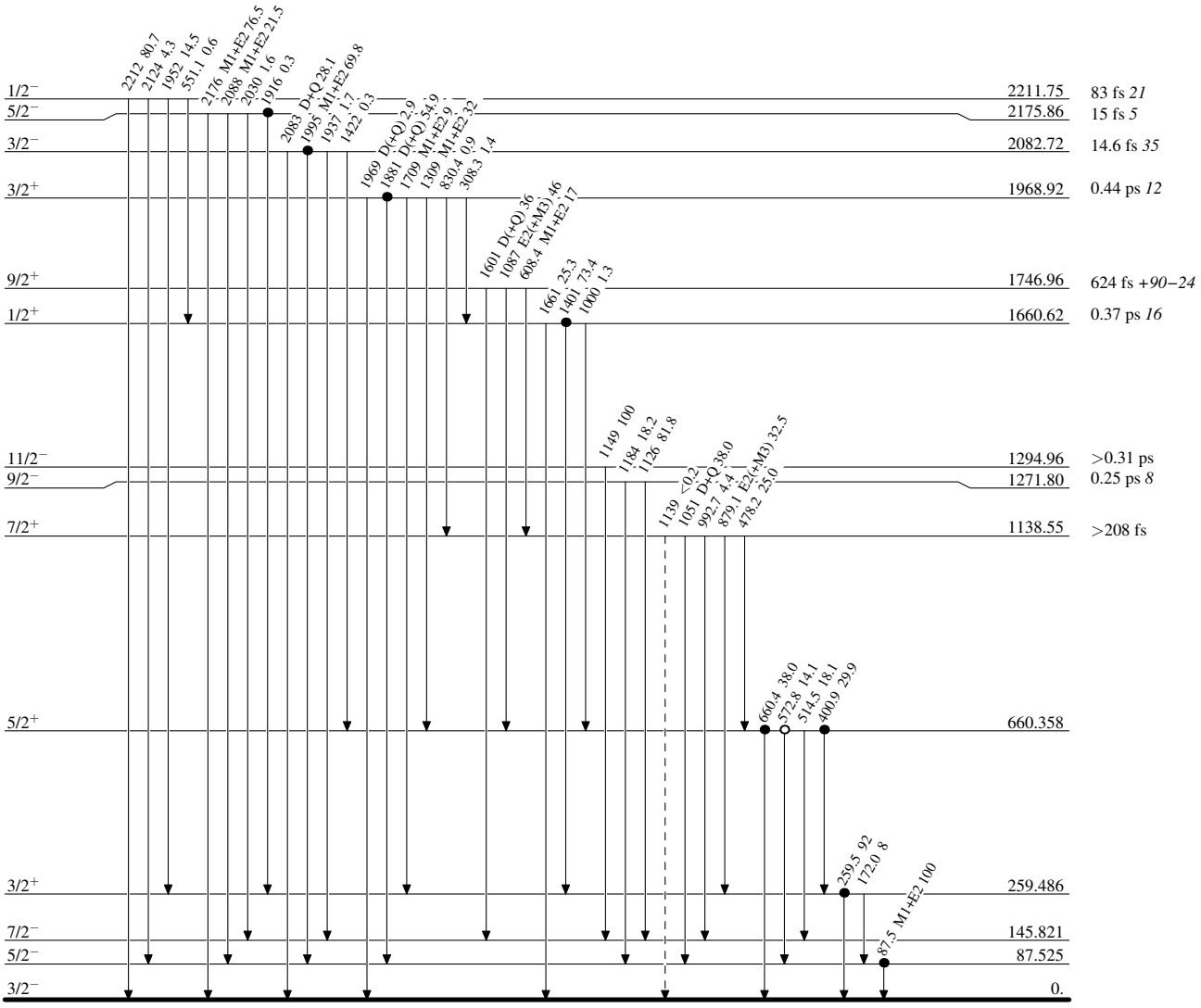
$^{47}_{23}V_{24}$

^{46}Ti(p,γ) 1993Ca12,1991Ki11,1986De13

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

Legend
- γ Decay (Uncertain)
- Coincidence
- Coincidence (Uncertain)



$^{47}_{23}V_{24}$